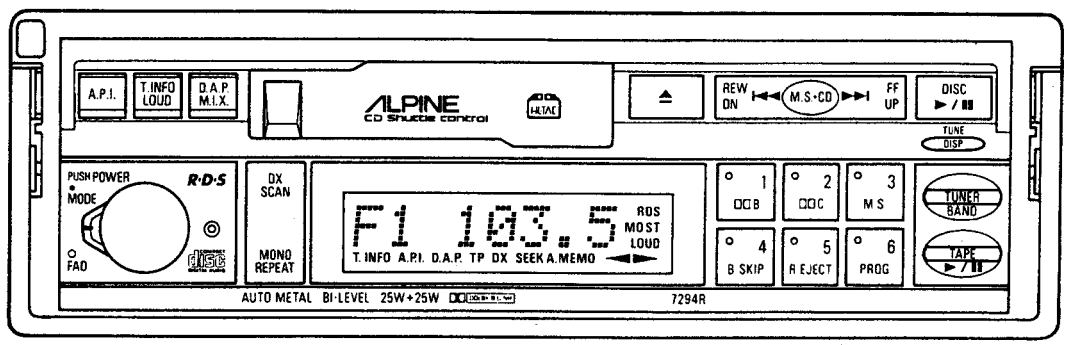
ALPINE SERVICE MANUAL

Digital FM/MW/LW/RDS Cassette Auto Reverse

CD Shuttle Controller



7294R

Contents

Specifications ····· 3 to 4
Error Indication for 5952/5952S ····· 5
Features ····· 5 to 6
Controls and Indicators ····· 6
Installation Method for the Shielding of Car Noise ····· 7 to 8
Precautions ····· 9
Connections ····· 9 to 11
Operation ····· 12 to 22
Block Diagram ····· 22 to 23
Disassembly Instructions ····· 24 to 25
Adjustment Procedures ····· 26 to 28
Adjustment Locations ····· 28 to 29
Tuner Schematic Diagram ····· 30
FL Display ····· 31 to 32
Description of IC Terminals ····· 33 to 36
Parts Layout on P. C. Boards and Wiring Diagram (1/2) ····· 37 to 39
Parts Layout on P. C. Boards and Wiring Diagram (2/2) ····· 40 to 42
Schematic Diagram (1/3) ····· 43 to 45
Schematic Diagram (2/3) ····· 46 to 48
Schematic Diagram (3/3) ····· 49 to 51
Electrical Parts List ····· 52 to 60
Cabinet Assembly Parts List ····· 61
Exploded View (Cabinet) ····· 62 to 63
Packing Assembly Parts List ····· 64
Packing Method View ····· 64
Semi-Conductor Lead Identifications ····· 65 to 73

Spare Schematic Diagram Inserted.

Specifications

FM RADIO

Intermediate Frequency	10.7 ± 0.1MHz
Frequency Range	87.5~108MHz
Usable Sensitivity (Mono at 98.1MHz)	13.2dBf
Limiting Sensitivity (-10dB, at 98.1MHz)	9.2 ± 5dBf
S/N Ratio (Stereo at 98.1MHz)	48dB
Image Rejection (at 90.1MHz)	60dB
Distortion (Input 1mV at 98.1MHz)	1%
Frequency Response (Ref. 400Hz, at 98.1MHz)	100Hz : 0 ± 3dB
	10kHz : -12 ± 3dB
Stereo Separation (at 1kHz)	25dB

MW RADIO

Intermediate Frequency	450kHz
Frequency Range	531~1,602kHz
Usable Sensitivity (20dB S/N, at 999kHz)	45.2dBf
S/N Ratio (at 999kHz)	44dB
Image Rejection (at 1,404kHz)	50dB
IF Rejection (at 603kHz)	60dB
Distortion (at 999kHz)	1%
Frequency Response (Ref. 400Hz, at 999kHz)	100Hz : -3 ± 4dB
	4kHz : -12 ± 6dB

LW RADIO

Intermediate Frequency	450kHz
Frequency Range	153~281kHz
Usable Sensitivity (20dB S/N, at 216kHz)	52.2dBf
S/N Ratio (at 216kHz)	44dB
Image Rejection (at 216kHz)	50dB
IF Rejection (at 216kHz)	50dB
Distortion (at 216kHz)	1%
Frequency Response (Ref. 400Hz, at 216kHz)	100Hz : -3 ± 4dB
	4kHz : -12 ± 6dB

TAPE PLAYER

Wow & Flutter (JIS WRMS, MTT-111N)	0.2%
Tape Speed (MTT-111N)	4.76cm/sec. +3 to -1%
S/N Ratio (MTT-212N)	Dolby OFF : 52dB
	Dolby B : 58dB
	Dolby C : 65dB
Distortion (MTT-118N)	2%
Frequency Response (Ref. 1kHz, MTT-256)	63Hz : -3dB
	12.5kHz : -3dB
Separation (MTT-141N)	30dB
Crosstalk (MTT-121N)	45dB
FF & REW Time (C-60)	140sec

GENERAL

Power Supply	DC14.4V
Power Output / Impedance	13W / ch / 4ohm
Output Voltage / Impedance	1V / 10kohm
Semiconductors	31IC's, 63Transistors, 25Diodes, 15Zener Diodes
Dimensions (W × H × D)	Chassis : 178 × 50 × 160mm
	Nose : 171 × 50 × 15mm
Weight	2.1kg

NOTE : Due to Continuing product improvement, specifications and designs are subject to change without notice.

ERROR INDICATION FOR 5952/5952S

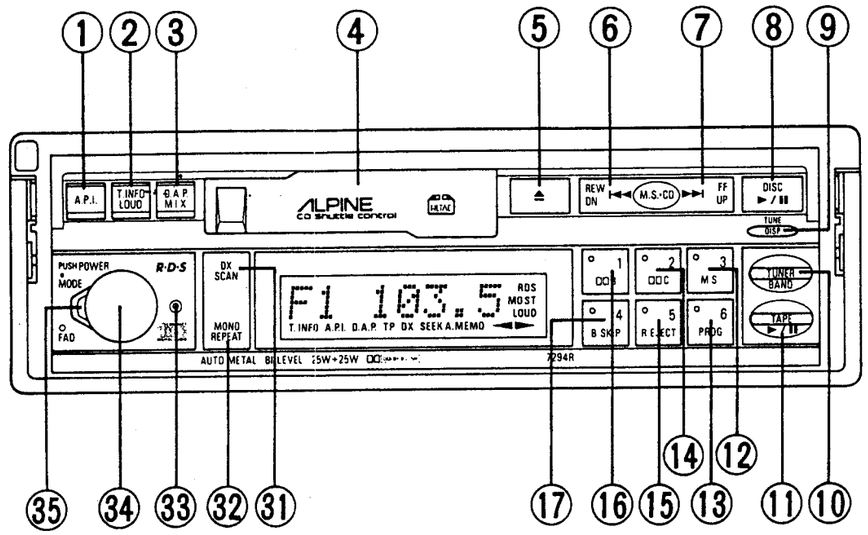
INDICATION	CAUSE	SOLUTION
ERROR-01	Disc-change malfunction.	Consult your Alpine dealer.
ERROR-02	Disc is in player mechanism.	Press the magazine eject button, and insert an empty magazine.
ERROR-03 ERROR-04 ERROR-05	Disc-change malfunction.	If the code disappears within a few seconds, unit is O.K. If not, consult your Alpine dealer.
ERROR-06	Disc-change malfunction.	Press the magazine eject button and pull out the Magazine. Check for error indication. Insert the magazine again. If the magazine can not be pulled out, consult your Alpine dealer.
ERROR-07	Magazine ejection impossible.	Press the magazine eject button. If the magazine does not eject, consult your Alpine dealer.
ERROR-30	High Temperature.	Will disappear when the temperature returns to operation range.
EEEE	Misconnection or disconnection of CD Shuttle.	Check connection between CD Shuttle and control unit.
NO MAGZN	No CD magazine in the CD Shuttle.	Insert the CD magazine.

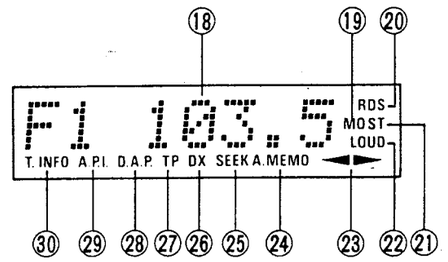
FEATURES

- **FULL FRONT DIN™**
- **CD SHUTTLE CONTROL**
- **HLTAC™ TAPE HEAD**
- **QUICK RELEASE BRACKET (Q.R.B.)**
  Alpine's exclusive Q.R.B. design allows for easy removal of the unit, while still maintaining memory backup. The unit may then be hidden elsewhere in the car or carried with the owner for theft prevention. This Q.R.B. also provides for easy reinstallation of the unit.
- **Q.R.B. MINDER**
  An audible reminder to remove your Head Unit upon leaving the vehicle.
- **PRESET ADDRESS**
  The indicator on any of the LiteTouch™ preset buttons will light when you press them. This lets you know which preset station is on (in the Radio mode).
- **A. MEMO (AUTO MEMORY)**
  In the A. MEMO mode, six of the strongest each band stations will be stored automatically.
- **D.A.P. (DIRECT ACCESS PRESET)**
  D.A.P. allows the storage of each band presets on the same band, eliminating the need to press the band select button. Up to six stations can be mixed in the D.A.P. band.
- **T. INFO (TRAFFIC INFORMATION)**
  While T. INFO function turns on, a traffic information service automatically can be received when a station transmits.
- **A.P.I. (AUTO PROGRAM IDENTIFICATION)**
  While A.P.I. function turns on in FM mode, a best receptive RDS station which has same program as the station you are receiving automatically can be received.
- **M.I.X. (RANDOM PLAY-CD only)**
  The music selections on the disc will be played randomly.
- **REPEAT (TAPE, CD)**
- **SCAN (TAPE, CD)**
  It scans quickly and plays the beginning of each music selection for ten seconds.
- **RETURN EJECT**
  When both A and B sides of a cassette tape have been reproduced, the unit ejects the tape automatically.
- **AUTO BLANK SKIP**
- **MUSIC SENSOR IN FAST FORWARD AND FAST BACKWARD**
- **DOLBY* B NOISE REDUCTION**
- **DOLBY* C NOISE REDUCTION**
- **SELECTABLE FADER**
  This system allows you to use either the preamp or power amp fader. The pre-amp fader controls the signal level in the preamp stage for two amplifiers, and the power amp fader balance the front and rear speaker sound in a four-speaker system.
- **LITETOUCH™ 30-STATION PRESETS**
  FM1 : 6, FM2 : 6, MW : 6, LW : 6, D.A.P.: 6

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol (◻◻) are trademarks of Dolby Laboratories Licensing Corporation.

CONTROLS AND INDICATORS





① Auto Program Identification Button
② Traffic INFOrmation/LOUDness Button
③ D.A.P. (Direct Access Preset)/M.I.X. Button
④ Cassette Loading Slot
⑤ Eject Button
⑥ M.S. · CD REW/DN Switch (⏮)
⑦ M.S. · CD FF/UP Switch (⏭)
⑧ DISC (Play ▶ /Pause ⏸) Button
⑨ TUNE/DISP Switch
⑩ TUNER/BAND Button
⑪ TAPE (Play ▶ /Pause ⏸) Button
⑫ Preset and Direct Disc Access No. 3/M.S. Button and Indicator
⑬ Preset and Direct Disc Access No. 6/PROGram Button and Indicator
⑭ Preset and Direct Disc Access No. 2/Dolby C NR Button and Indicator
⑮ Preset and Direct Disc Access No. 5/Return EJECT Button and Indicator
⑯ Preset and Direct Disc Access No. 1/Dolby B NR Button and Indicator
⑰ Preset and Direct Disc Access No. 4/Blank SKIP Button and Indicator
⑱ Digital Display
⑲ MOno Indicator
⑳ RDS Indicator
㉑ STereo Indicator
㉒ LOUDness Indicator
㉓ Tape Direction Indicators
㉔ A. MEMO Indicator
㉕ SEEK Indicator
㉖ DX Indicator
㉗ TP Indicator
㉘ D.A.P. Indicator
㉙ A.P.I. Indicator
㉚ T. INFO Indicator
㉛ DX (Local/Distance) Switch/SCAN Button
㉜ MONO Switch/REPEAT Button
㉝ Reset Switch
㉞ POWER on/off Switch (PUSH)/Audio MODE Select Switch (PUSH)
㉟ FADer Control

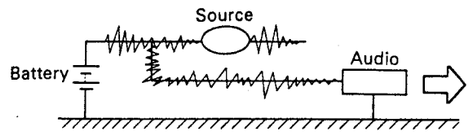
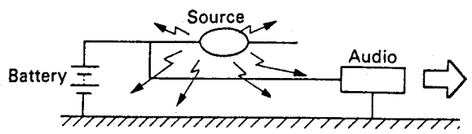
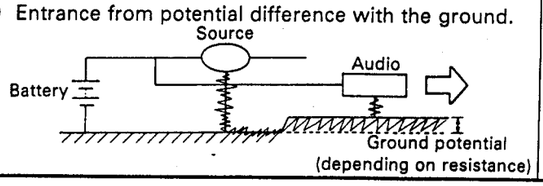
Installation Method for the Shielding of Car Noise

- **Introduction**
  Measures against car noise are very important for delivering the best performance from your audio system. In view of this, this product should be installed properly to suppress the effects of car noise.
  Here we present a basic installation method for suppressing car noise.

- **Types of Car Noise (Representative Examples)**

Sound	Source of Noise	Generation Conditions
Sparking and crackling sounds	Ignition system circuit of the engine	Level is practically steady while engine is operating.
Drawn out sounds	Alternator (Generator)	Frequency fluctuates in proportion to the rpm while the engine is operating.
Continuous sound	Computer used for engine control purposes	When the key position is "ON" and during engine operation.
Short burst sound	Switches and relays	When switches of special electrical parts operate.
Humming sounds	Wiper motor and motorized mirror	During operation of the wiper motor. During operation of the motorized mirror.

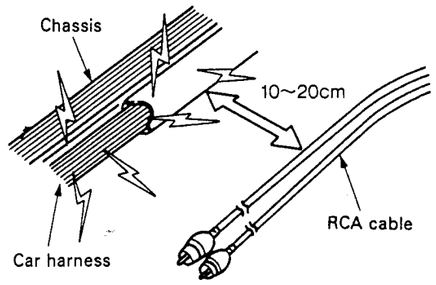
- **Routes Through which Car Noise is Introduced and Preventive Measures**
  Noise generated from noise sources such as those listed above travel along various routes and enter the audio system.
  These are the three major routes:

Main Causes	Countermeasures
① Direct entrance to the power line. 	Prevention is possible by installing a power supply filter into the audio power line.
② Entrance as electromagnetic waves from the source. 	Prevention is possible by separating the audio equipment from the source (including car harnesses on which the noise travels).
③ Entrance from potential difference with the ground. 	Prevention is possible by reducing (e. g. removing the coating) the contact resistance of the parts of the audio equipment connected to ground.

Installation Method for the Shielding of Car Noise

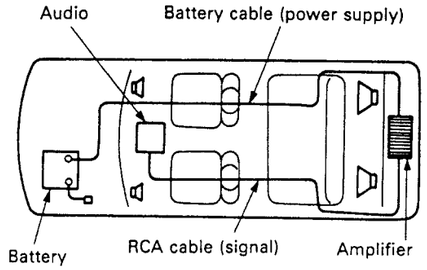
- **Installation Methods which Help Prevent the Entrance of Car Noise**

Keep the equipment away from the car harness.
The car harness which is wired throughout the car might be exposed to the entrance of noise from the various electrical parts in the car.
A basic audio installation practice is to install the main component away from the car harness and wire it at that location.

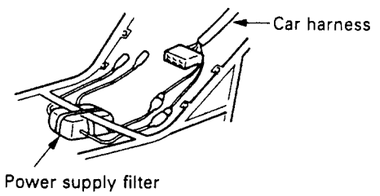


Do not have the power system and the signal system close together.
When making a new audio wiring installation, ***a basic practice is to do the wiring as far away from the battery power cable as possible.***
If wired together, the noise will enter the RCA cable from the battery power supply.

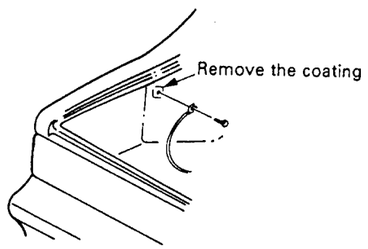
A power supply filter is the first step in noise prevention.
Use of a power supply filter is the first step in preventing noise from entering the audio system from the power line that branches from the car harness. Note that when current flows through a power supply filter a magnetic field is produced and this can effect the audio as a noise. The installation location of the power supply filter is also an important factor.



The amount of noise will vary depending on the quality of the ground.
The current drawn by the audio equipment flows from the power line through the equipment and then back to the car body through the ground wire. When a stress is produced on this current, noise is introduced. Like the power line, the ground is an important factor. When fastening the ground wire by a screw, the essential point is to cleanly remove the coating from the car chassis to allow the current to flow easily.



* Alpine has a variety of power supply filters (surge suppressors) for noise prevention applications. For further details, contact your store of purchase.

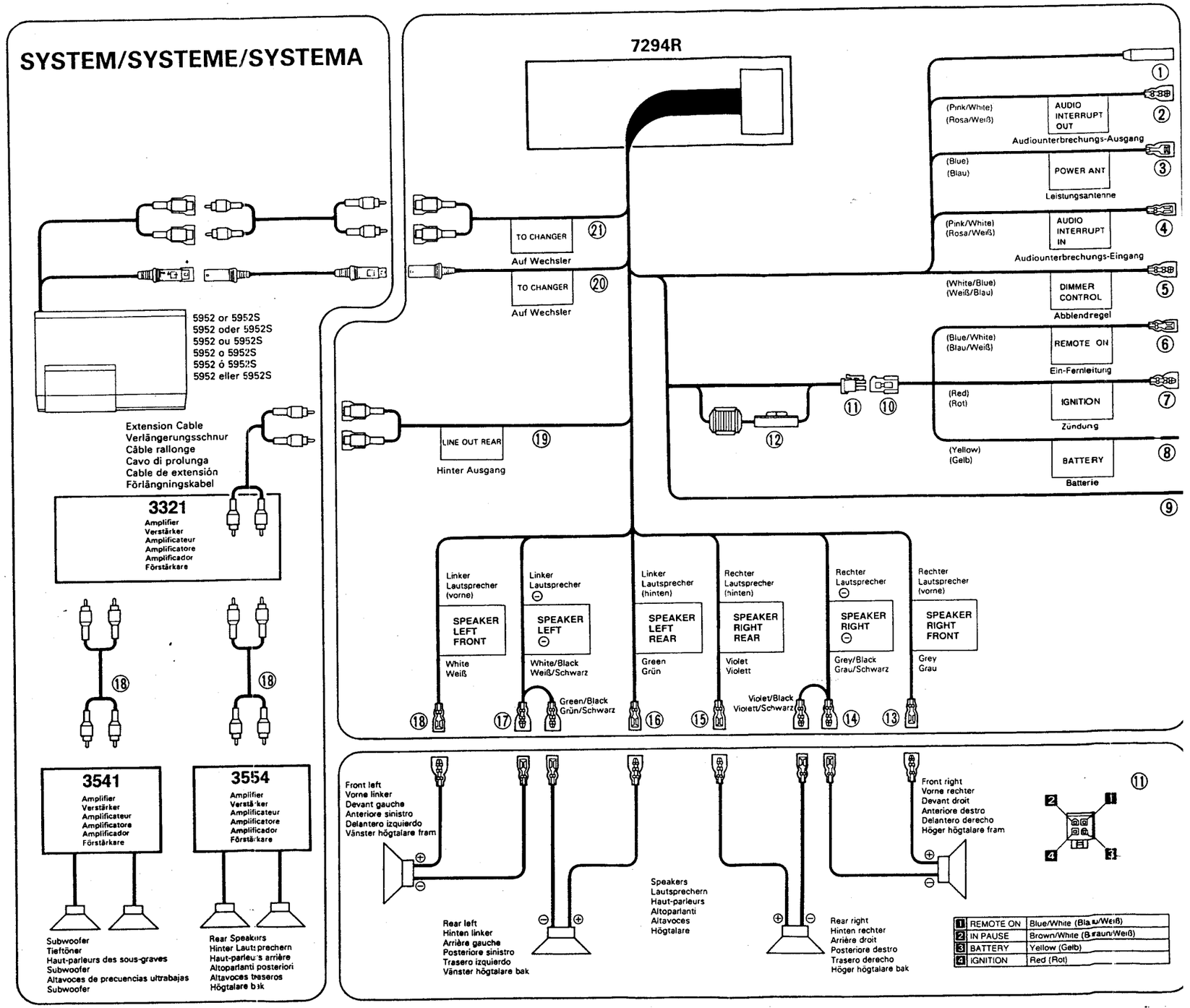


PRECAUTIONS

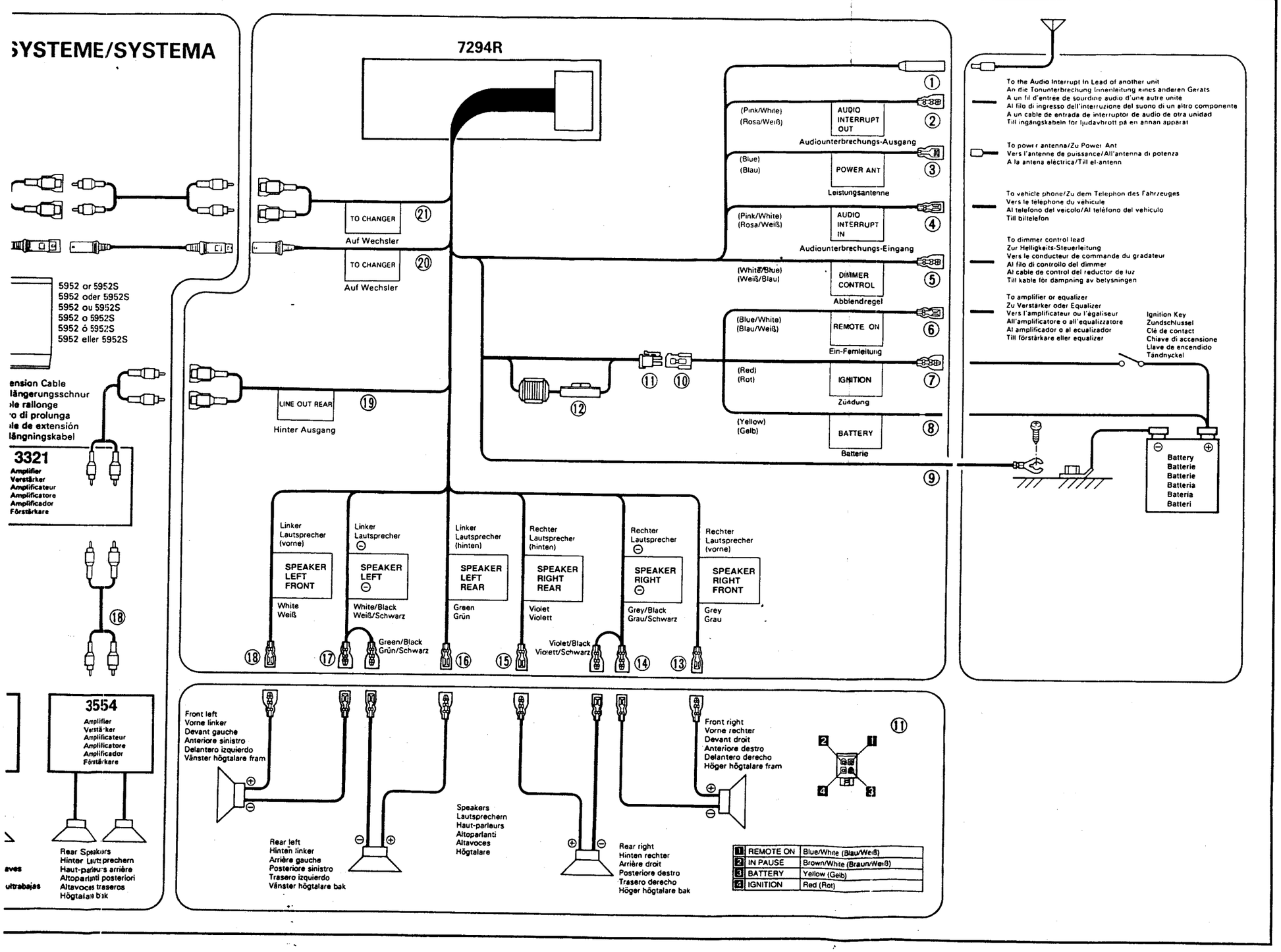
- When replacing the fuse(s), the replacement must be of the same amperage as shown on the fuse holder. If the fuse(s) blows more than once, carefully check all electrical connections for shorted circuitry. Also have your vehicle's voltage regulator checked. Do not attempt to repair the unit yourself. Return it to your Alpine dealer or the nearest Alpine Service Station for servicing.
- In order to ensure proper performance, be sure the temperature in your vehicle is between the range of 14° F (−10°C) to 140°F (60°C) before turning your player on. Good air circulation is essential to prevent heat build-up in the unit (especially in hot weather).
- C-120 type cassette tapes are not recommended for use in automobile tape players.
- Prevent any foreign objects from entering the cassette opening as the precision mechanism and tape head may be damaged.
- To protect your cassette tapes, store them in a cool place away from dust, dirt, and strong magnetic sources such as electric motors, speakers and TV sets.
- Check and make sure any slack in the tape is taken up before inserting the tape into the unit. A loose tape could cause damage to the unit and the tape itself. Tighten the cassette by inserting a pencil or a similar instrument into the spindle hole and turn until all the slack has been taken up.
- Use of this equipment at high volumes could damage your hearing.
- **CAUTION:**
  In the event of road vibration or rapid acceleration or vehicle collision, this unit may become dislodged from its case unless the handle is fully down. This could result in personal injury to occupants of the vehicle or physical damage to the unit. Please see the illustrations below for further information on how to properly secure the handle.

- **CAUTION:**
  The heat sink on the rear of the unit will become hot after operation. Exercise caution when the unit is removed from the Q.R. Bracket.

Connections/Anschlüsse/Connexions/Collegamenti/Conexiones/An



Connections/Anschlüsse/Connexions/Collegamenti/Conexiones/Anslutningar



① **Antenna Receptacle**
② **Audio Interrupt Out Lead (Pink/White)**
③ **Power Antenna Lead (Blue)**
When loaded with a power antenna, connect to the +B terminal of the power antenna.
④ **Audio Interrupt In Lead (Pink/White)**
⑤ **Dimmer Control Lead (White/Blue)**
This lead is for connection to a rheostat such as the dashboard light dimmer in your vehicle. Applying (+)12V to this lead causes the maximum dimming. Varying the voltage controls the brightness of the display. This allows you to dim the unit's display with the dashboard lights.
⑥ **Remote Turn-On Lead (Blue/White)**
Connect this lead to the remote turn-on lead of your amplifier or signal processor.
⑦ **Switched Power Lead (Ignition) (Red)**
Connect this lead to an open terminal on the vehicle's fuse box or another unused power source which provides (+)12V only when the ignition is turned on or in the accessory position.
⑧ **Battery Lead (Yellow)**
Connect this lead to the positive (+) post of the vehicle's battery.
⑨ **Ground Lead**
Connect this lead to a good chassis ground on the vehicle. Make sure the connection is made to bare metal and is securely fastened using the sheet metal screw provided.
⑩ **Power Wiring Harness (Included)**
Connect to the Power Supply Connector ⑪.
⑪ **Power Supply Connector**
Connect to the receptacle of Power Wiring Harness ⑩.
⑫ **Fuse Holder (5A)**
⑬ **Right Front Speaker Output Lead (Grey)**
⑭ **Right Speaker Output Lead (Common) (Grey/Black)**
⑮ **Right Rear Speaker Output Lead (Violet)**
⑯ **Left Rear Speaker Output Lead (Green)**
⑰ **Left Speaker Output Lead (Common) (White/Black)**
⑱ **Left Front Speaker Output Lead (White)**
⑲ **Rear Output RCA Connectors**
RED is right and WHITE is left.
⑳ **DIN Connector**
Connect this to 5952 or 5952S CD Shuttle only for control.
㉑ **Input RCA Connectors**
RED is right and WHITE is left.

OPERATION

● BASIC OPERATION

Initial System Start

When operating the system for the first time after installation or after the vehicle's battery has been disconnected and reconnected, set the volume level to its minimum, then carefully press the Reset switch ㉝ with a sharp pencil or any other pointed object.

How to adjust the volume and tone (Refer to the diagram in next page.)

1. Press the POWER on/off switch ㉞ to turn the unit on.
2. Press the Audio MODE Select switch ㉔ to select each adjusting mode.
   VOL → TREB → BASS → BAL → VOL · · · ·
   Everytime this switch is pressed, the mode changes. Each mode indicator is then On. The mode indicator changes as each mode is selected.
3. Once the desired mode appears in the display, rotate the Audio MODE Select switch to make your adjustment. The display will return to the previous mode indication after five seconds.

Power Off

Press the POWER on/off switch ㉞ to turn the unit off for more than two seconds.

LOUDness

Press the LOUD button ② for more than two seconds to activate the loudness function. Press the LOUD button ② for more than two seconds again to defeat this feature.

Mode Switching of the 7294R

1. Radio Mode
   Press the TUNER button ⑩ to put the unit into the radio mode. The Band indicator (F1, F2 or MW or LW) and the frequency will appear in the display ⑱.
2. Cassette Player Mode
   Press the TAPE button ⑪ to put the unit into the cassette player mode.
3. CD Shuttle Mode
   Press the DISC button ⑧ to put the unit into the CD mode.

Five Modes Setting Function

This unit allows setting of five modes shown below. For further details, refer to the description on each mode.

* FM level switching.
* Sound volume setting during reception of traffic information.
* Operation switching when a traffic information station is not received.
* Operation switching for Q.R.B. Minder.
* Switching of automatic tracing function. (Station name display & automatic tracing function/station name display only.)

7294R

OPERATION

Fader Control

Rotate the Fader control ㉟ for your desired front to rear volume balance.

Indication example	Turn the Audio MODE Select switch.	
	Left	Right
VOL adjust. (Min — 0) VOL-26dB	Volume decrease VOL Min	Volume increase VOL 0dB
TREB adjust. TREB -3	Treble decrease TREB -4	Treble increase TREB +4
BASS adjust. BASS 0	Bass decrease BASS -4	Bass increase BASS +4
BAL adjust. BAL R +2	Volume increase of left speaker BAL L+18	Volume increase of right speaker BAL R+18

S.T.M. (Source Tone Memory)

The Bass and Treble controls can be individually set for each source (FM, MW/LW, Tape, and CD). Once set, their positions are automatically memorized. Whenever the source is reselected, the Bass and Treble controls will return to your preset configuration.

Switching the FM Volume

Use this function if the difference in volume is great when switching between a tape and the FM radio.

1. Press the TUNE switch ⑨ for 3 seconds.
2. Press the Preset No. 1 button ⑯ to switch the display between "FM-LV Hi" and "FM-LV Lo".
   The FM volume can be set to one of two positions, high or low. Set the position according to the broadcast station.

FM-LV Hi ⟷ FM-LV Lo

7294R

OPERATION

● RADIO OPERATION

Press the POWER switch ㉞ to turn the power on and set the unit to the radio r

Tuning Band Selection

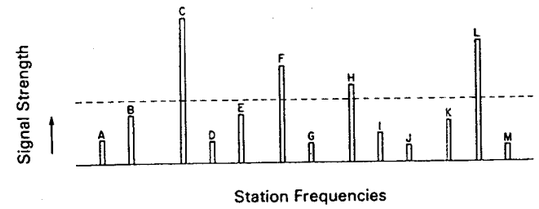
Press the BAND button ⑩ to select the desired tuning band. The Band indicat your selection.

Local/Distance (DX) Seek Sensitivity for FM, MW and LW

You can select the radio seek sensitivity local or distance (DX), by pressing the (distance) switch ㉛.

In the local mode, with no DX indication ㉖, the radio tunes in only strong statio (stations C, F, H and L in the illustration below).

In the distance mode, with DX indication ㉖, the radio tunes in both strong and stations (all stations from A to M in the illustration).



FM Stereo/Monaural Switching

You can select between the Auto Switching or Monaural only for FM reception pressing the MONO switch ㉜. In the Auto Switching mode, you can receive ste broadcasts in stereo and monaural broadcasts in MONO. The STereo ㉑ or MO ⑲ shows you which one is being received. In the Monaural mode, you will recei broadcast in monaural only, even if the broadcast is in stereo. The monaural only quiets the noisy stereo signal of weaker broadcasts. The STereo indicator ㉑ will appear while the monaural mode is selected.

Manual Tuning

1. Press the TUNE switch ⑨ until the SEEK ㉕ and A. MEMO ⑭ indicators disap the display.
2. To select the tuning band, press the BAND button ⑩. The Band indicator sh selection.
3. To tune to higher frequencies, press the M.S. · CD switch on the right (UP) ⑦ To tune to lower frequencies, press this same switch on the left (DowN) ⑥.

Auto SEEK Tuning

1. Press the TUNE switch ⑨ until the SEEK indicator ㉕ appears in the display.
2. Select the tuning band with the BAND button ⑩.
3. Press the UP (▶▶|) ⑦ or DN (|◀◀) ⑥ switch. The unit automatically tunes to higher or lower frequency and locks on that station.

OPERATION

ol
· Fader control ㉟ for your desired front to rear volume balance.

on example	Turn the Audio MODE Select switch.	
	Left	Right
(Min — 0)	Volume decrease	Volume increase
-26dB	VOL Min	VOL 0dB
t.	Treble decrease	Treble increase
B -3	TREB -4	TREB +4
t.	Bass decrease	Bass increase
S 0	BASS -4	BASS +4
	Volume increase of left speaker	Volume increase of right speaker
R +2	BAL L+18	BAL R+18

rce Tone Memory)
and Treble controls can be individually set for each source (FM, MW/LW, D). Once set, their positions are automatically memorized. Whenever the elected, the Bass and Treble controls will return to your preset configuration.

he FM Volume
unction if the difference in volume is great when switching between a tape adio.
e TUNE switch ⑨ for 3 seconds.
e Preset No. 1 button ⑯ to switch the display between "FM-LV Hi" and Lo".
volume can be set to one of two positions, high or low. Set the position g to the broadcast station.

FM-LV Hi ⟷ FM-LV Lo

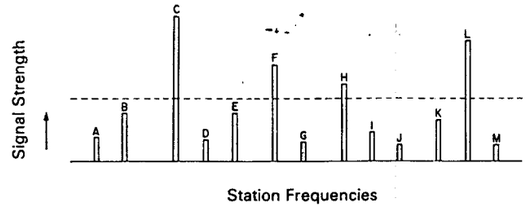
OPERATION

● **RADIO OPERATION**

Press the POWER switch ㉞ to turn the power on and set the unit to the radio mode.

Tuning Band Selection
Press the BAND button ⑩ to select the desired tuning band. The Band indicator shows your selection.

Local/Distance (DX) Seek Sensitivity for FM, MW and LW
You can select the radio seek sensitivity local or distance (DX), by pressing the DX (distance) switch ㉛.
In the local mode, with no DX indication ㉙, the radio tunes in only strong stations (stations C, F, H and L in the illustration below).
In the distance mode, with DX indication ㉙, the radio tunes in both strong and weak stations (all stations from A to M in the illustration).



Station Frequencies

FM Stereo/Monaural Switching
You can select between the Auto Switching or Monaural only for FM reception by pressing the MONO switch ㉜. In the Auto Switching mode, you can receive stereo broadcasts in stereo and monaural broadcasts in MONO. The STereo ㉑ or MO indicator ⑲ shows you which one is being received. In the Monaural mode, you will receive the broadcast in monaural only, even if the broadcast is in stereo. The monaural only mode quiets the noisy stereo signal of weaker broadcasts. The STereo indicator ㉑ will not appear while the monaural mode is selected.

Manual Tuning
1. Press the TUNE switch ⑨ until the SEEK ㉕ and A. MEMO ㉔ indicators disappear in the display.
2. To select the tuning band, press the BAND button ⑩. The Band indicator shows your selection.
3. To tune to higher frequencies, press the M.S. · CD switch on the right (UP) ⑦.
   To tune to lower frequencies, press this same switch on the left (DowN) ⑥.

Auto SEEK Tuning
1. Press the TUNE switch ⑨ until the SEEK indicator ㉕ appears in the display.
2. Select the tuning band with the BAND button ⑩.
3. Press the UP (▶▶|) ⑦ or DN (|◀◀) ⑥ switch. The unit automatically tunes to the next higher or lower frequency and locks on that station.

OPERATION

Preset Memory Programming
Follow the instructions below to enter stations into preset memory:
1. Select the tuning band (FM1, FM2, MW or LW) with the BAND button ⑩.
2. Tune in your desired station using Manual or Auto SEEK tuning.
3. Press the Preset button number 1 ⑫ for more than two seconds. The digital display ⑱ will begin to blink. Press that preset button again while the display is blinking (within 5 seconds).
4. The frequency you selected will be placed into Preset Memory number 1 and will appear in the display.
   NOTE:
   If a preset memory has already been set in the same address, it will be cleared and the new station will be memorized.
5. Follow steps 2 — 3 for the remaining presets (2 —6). This procedure should be followed for FM1, FM2, MW and LW.

Auto MEMOry Preset
1. Press the TUNE switch ⑨ to light up the A. MEMO indicator ㉔.
2. Select the desired tuning band (FM1, FM2, MW or LW) with the BAND button ⑩.
3. Press the UP ⑦ or DN ⑥ switch. The tuner will automatically seek the 6 strongest stations in each band and memorize them in order of the signal strength. These stations are automatically placed in the preset memory with the strongest station in Preset No. 1 and the 6th strongest station in Preset No. 6. When seeking stations, the tuner first seeks in the local tuning mode. If less than 6 stations are memorized, the tuner seeks again in the distance (DX) mode.
4. After finishing the Auto Memory Preset, the tuner goes to the station placed in Preset Memory No. 1. If no stations are memorized, it returns to the original station you were listening to before the Auto Memory Preset procedure began. When auto memory presetting is completed, the A. MEMO indicator ㉔ will disappear and the SEEK indicator ㉕ will appear.

NOTE:
The Auto Memory Preset feature also works in the D.A.P. mode.

Preset Tuning
After the preset stations have been memorized, you can tune in your desired station (within the band displayed) with one touch of a button.
1. Select the tuning band (FM1, FM2, MW or LW) with the BAND button ⑩.
2. Press any one of the Preset buttons (⑫ — ⑰) and the indicator on that button will light.
3. The frequency of the station placed in the selected preset location will appear in the display.

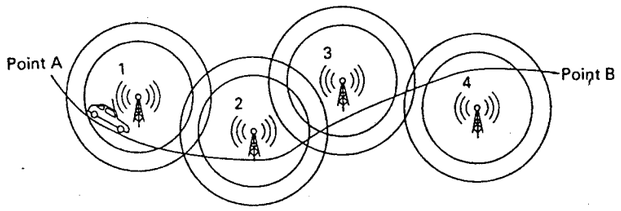
D.A.P. (Direct Access Preset)
This feature allows the storage of FM, MW and LW presets on the same band. Press the D.A.P. button ③ to light up the D.A.P. indicator ㉘. To program stations into the D.A.P. band, follow steps 1 — 3 as described in the Preset Memory Programming section above.

Accessing the D.A.P. Presets
1. Press the D.A.P. button ③. The D.A.P. indicator ㉘ will illuminate in the display.
2. Press one of the preset buttons (⑫ — ⑰).
3. The frequency of the station placed in the selected D.A.P. location will appear in the display.

● **R.D.S. METHOD**

The R.D.S. (Radio Data System) is a broadcasting system in which digital data for automatic tuning, etc., on car radios is added to the FM radio signals.
Its standards are set by the E.B.U. (European Broadcasting Union).

Automatic Tracing

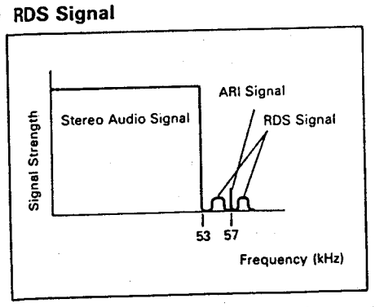


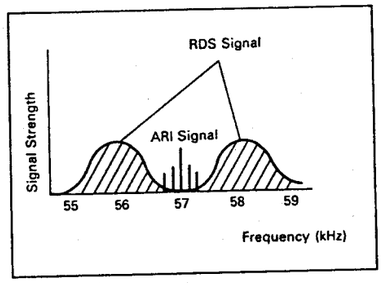
To keep receiving the same broadcast when moving from point A to point B with the network shown above, it was previously necessary to tune in the next station (1 to 4) either manually or using the seek operation once the reception got bad.
The auto tuning system automatically switches the reception station to the station in the network offering the best reception.

The RDS data used are the PI, PS, AF, TP and TA data.

PI: Program Identification code
Code identifying programs and consisting of a country code and a program code.
PS: Program Service name
Broadcast station name signal expressed in alphanumerical characters of up to 8.
AF: Alternative Frequencies
Frequency list signal for broadcasting stations transmitting the same program.
TP: Traffic Program identification
Identification signal for traffic information broadcasting station.
TA: Traffic Announcement identification
Identification signal showing traffic information is being transmitted or not.

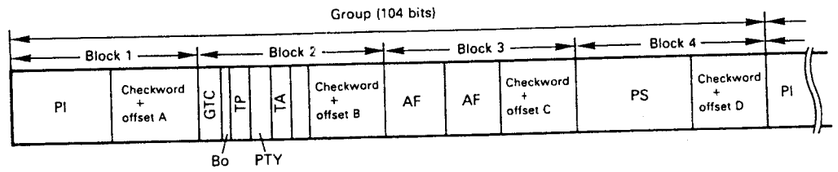
● **RDS Signal**





The RDS data are transferred as shown above so that they do not give any influence on the sound signals.

● **RDS Data Structure (Sample of type 0A group)**



RDS Function on the 7294R

The RDS data is used for the following operations:

- Auto tuning to the station in the network with the best reception is performed using the PI and AF data.
- The station name is displayed using the PS data.
- Traffic information is received automatically using the TP and TA data.

A.P.I. (Auto Program Identification) Operation

1. Press the TUNER/BAND button ⑩ to set the FM mode. (The A.P.I. function does not operate on the MW and LW bands.)
2. Press the A.P.I. button ①. The A.P.I. indicator ㉙ appears on the display.
3. Press the TUNE switch ⑨ to set the seek mode. (The SEEK indicator ㉕ appears on the display.)
4. Press the UP or DN switch (⑦ or ⑥) to start tuning.
   Once the station is tuned in, the RDS indicator ⑳ appears on the display.
   After approximately 1 second, the display switches from the frequency to the station name.
   (If the reception is poor, more time is required for the station name to appear.)
5. When the reception of the station last tuned in becomes poor, the set automatically switches to another frequency broadcasting the same program with better reception. (The automatic follow operation does not function in areas where there is no broadcast network.)
6. Press the A.P.I. button ① to cancel the A.P.I. mode.
   The A.P.I. indicator ㉙ on the display turns off, and the station display switches back to the frequency display.

NOTE:

1. With the A.P.I. button ① in the on position, reception of an RDS station (indicated by the station name display and the lighting of the RDS indicator) will result in automatic tracing of stations having the same broadcast contents.
2. When the A.P.I. button ① is left on in the seek mode, the radio will also stop at non-RDS stations, but the display will continue to show a frequency.

Other Convenient Functions

Manual tracing operation:

When the A.P.I. button ① is pressed for two seconds while in the A.P.I. mode (wh the A.P.I. indicator ㉙ on the display is on), reception switches to the station includec among the AF data which is broadcasting the same program with the best reception "AF SEEK" is displayed during this operation.
When the operation is completed, "SEEK END" appears on the display.

In areas where operation does not function properly due to reasons of the broadcast stations:

1. Turn the auto tracing function off.
   Press the TUNE switch ⑨ for 3 seconds. And then press the Preset No. 5 buttor
   The display switches between "PS ONLY" and "PS & API" each time the button pressed.
   Press the TUNE switch ⑨ when "PS ONLY" is displayed.
   The auto follow function is now off, but the station name is displayed.
2. Press the A.P.I. button ① for two seconds when the reception of the station tun is poor.
   The set searches for the station which is broadcasting the same program with t best reception among those included in the AF data.
   "AF SEEK" appears on the display during the operation.
   When the operation is completed, "SEEK END" appears on the display.

Setting the PI in the Preset Memory

1. Tune in an RDS station and set the display to the station name display.
2. Press one of preset buttons 1 to 6 for two seconds.
3. The station name flashes for 5 seconds. Press the preset button at which you store the PI while the display is flashing. The PI is now stored in the memory.
4. Set other preset buttons in the same way.

- If a preset button at which a PI is stored is pressed, the station name will be displayed, not the frequency.
- If a preset button at which a PI is stored is pressed and a station broadcasting same program cannot be received, "RDS SEEK" appears on the display after 2 seconds and the set searches for a station broadcasting the same program.
- If a station broadcasting the same program cannot be tuned in, reception returr the original frequency and the preset indicator turns off.

RDS auto memory function

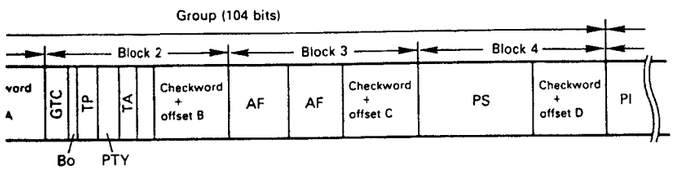
Six RDS stations can be stored in the preset memory in order according to the b reception conditions.
Set to the RDS station reception mode.
Press the TUNE switch ⑨ to set the A.MEMO mode, then press the UP or DN sw or ⑥) to start the auto memory operation.

CAUTION:

1. The PI and PS data stored in the memory are cleared when the auto memory f is used, so set them in the memory once again.
2. The PI and PS data are not stored in the memory when RDS stations are prese the auto memory function.
   To use the PI memory function, press the preset button after the auto r operation is finished and store the PI data in the preset memory.

OPERATION

ucture (Sample of type 0A group)



n the 7294R
ɹsed for the following operations:
› the station in the network with the best reception is performed using data.
ɜme is displayed using the PS data.
ation is received automatically using the TP and TA data.

ɡram Identification) Operation
NER/BAND button ⑩ to set the FM mode. (The A.P.I. function does not e MW and LW bands.)
'.I. button ①. The A.P.I. indicator ㉙ appears on the display.
NE switch ⑨ to set the seek mode. (The SEEK indicator ㉓ appears on

or DN switch (⑦ or ⑥) to start tuning.
tion is tuned in, the RDS indicator ⑳ appears on the display.
mately 1 second, the display switches from the frequency to the station
ion is poor, more time is required for the station name to appear.)
ɔeption of the station last tuned in becomes poor, the set automatically
ɪnother frequency broadcasting the same program with better reception.
ːic follow operation does not function in areas where there is no broadcast

ᵓ.I. button ① to cancel the A.P.I. mode.
ɾicator ㉙ on the display turns off, and the station display switches back to y display.

.I. button ① in the on position, reception of an RDS station (indicated by ame display and the lighting of the RDS indicator) will result in automatic ɪtions having the same broadcast contents.
P.I. button ① is left on in the seek mode, the radio will also stop at tions, but the display will ɔontinue to show a frequency.

OPERATION

Other Convenient Functions

Manual tracing operation:
When the A.P.I. button ① is pressed for two seconds while in the A.P.I. mode (when the A.P.I. indicator ㉙ on the display is on), reception switches to the station included among the AF data which is broadcasting the same program with the best reception. "AF SEEK" is displayed during this operation.
When the operation is completed, "SEEK END" appears on the display.

In areas where operation does not function properly due to reasons of the broadcast stations:
1. Turn the auto tracing function off.
   Press the TUNE switch ⑨ for 3 seconds. And then press the Preset No. 5 button ⑮.
   The display switches between "PS ONLY" and "PS & API" each time the button is pressed.
   Press the TUNE switch ⑨ when "PS ONLY" is displayed.
   The auto follow function is now off, but the station name is displayed.
2. Press the A.P.I. button ① for two seconds when the reception of the station tuned in is poor.
   The set searches for the station which is broadcasting the same program with the best reception among those included in the AF data.
   "AF SEEK" appears on the display during the operation.
   When the operation is completed, "SEEK END" appears on the display.

Setting the PI in the Preset Memory
1. Tune in an RDS station and set the display to the station name display.
2. Press one of preset buttons 1 to 6 for two seconds.
3. The station name flashes for 5 seconds. Press the preset button at which you want to store the PI while the display is flashing. The PI is now stored in the memory.
4. Set other preset buttons in the same way.

- If a preset button at which a PI is stored is pressed, the station name will be displayed, not the frequency.
- If a preset button at which a PI is stored is pressed and a station broadcasting the same program cannot be received, "RDS SEEK" appears on the display after 2 seconds and the set searches for a station broadcasting the same program.
- If a station broadcasting the same program cannot be tuned in, reception returns to the original frequency and the preset indicator turns off.

RDS auto memory function
Six RDS stations can be stored in the preset memory in order according to the best reception conditions.
Set to the RDS station reception mode.
Press the TUNE switch ⑨ to set the A.MEMO mode, then press the UP or DN switch (⑦ or ⑥) to start the auto memory operation.

CAUTION:
1. The PI and PS data stored in the memory are cleared when the auto memory function is used, so set them in the memory once again.
2. The PI and PS data are not stored in the memory when RDS stations are preset using the auto memory function.
   To use the PI memory function, press the preset button after the auto memory operation is finished and store the PI data in the preset memory.

OPERATION

TRAFFIC INFORMATION FUNCTION
With this function, traffic information can be received automatically from any mode. This function operates using the RDS TP and TA signals or the ARI SK and DK signals.

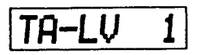
To receive traffic information:
1. Press the TUNER/BAND button ⑩ to set the FM mode. (The traffic information function does not operate on the MW and LW bands.)
2. Press the T. INFO button ②. The T.INFO indicator ㉚ appears on the display. The TP indicator ㉗ lights when a traffic information station is received regardless of the traffic information mode.
3. Press the TUNE switch ⑨ to set the seek mode. (The SEEK indicator ㉕ appears on the display.)
4. Use the UP or DN switch (⑦ or ⑥) to start searching.
   The set automatically searches for a traffic information station.
   Once the station is tuned in, the TP indicator ㉗ appears on the display.

5. The following appears on the display when traffic information is received:

NOTE:
When a reception signal strength is poor during the traffic information reception, the function which holds the traffic information reception mode works for 20 seconds.
If no information is received for 20 seconds, the traffic information reception mode is automatically cancelled and the unit returns to the original mode. If a traffic information termination signal is received during the hold period, the unit also returns to the original mode.

6. If traffic information is received while a cassette or CD is playing, the cassette or CD is automatically paused and the traffic information can be heard. Once the traffic information is over, the set returns to the previous mode.

7. If traffic information is received when the volume control is set at the minimum, the volume is automatically set to the preset level while the traffic information is being received.
   Four preset volume levels can be set for traffic information reception
   (1) Press the TUNE switch ⑨ for 3 seconds.
   (2) Press the Preset No. 2 button ⑭ to switch between TA-LV 4 to TA-LV 1. Select the desired level.



8. When the reception of the broadcast station currently tuned in becomes poor, the TP indicator ㉗ turns off and the set is set to the following state:

OPERATION

(1) An alarm is sounded 25 seconds after traffic information stations can no longer be received (the TP indicator ㉗ turns off).
If a cassette or CD is playing, it is paused automatically and the alarm is sounded.
(2) Use the manual tuning, seek, or auto memory functions to tune in another station.
(3) When the set is in the seek mode, if the UP or DN button (⑦ or ⑥) is pressed, the set only searches for traffic information stations. It either finds a traffic information station or continues searching until the seek mode is canceled.

9. To search only for traffic information stations:
(1) Press the TUNE switch ⑨ for 3 seconds.
(2) Press the Preset No. 3 button ⑫.
The display switches between "TP SEEK" and "TP ALARM" each time the Preset No. 3 button ⑫ is pressed.

(3) Set the display to "TP SEEK" and press the TUNE switch ⑨.
- In this mode, the set automatically searches for the traffic information station with the best reception in that area 25 seconds after the traffic information station can no longer be received (after the TP indicator ㉗ turns off).
- When traffic information stations cannot be received, the previous station is tuned back in. This operation is performed again if traffic information signals are cannot be received for 25 seconds. If a station broadcasting traffic information is set, the set also switches to stations broadcasting other programs.
- Traffic information stations are automatically tuned in even during playback of a cassette or CD.

10. The set operates as follows if both the traffic information and A.P.I. modes are set:
The automatic follow operation is performed for stations broadcasting the same program which are also traffic information broadcast stations.

When traffic information stations cannot be received:
In the alarm mode:
An alarm is sounded after 25 seconds.
If a cassette or CD is playing, it is paused automatically, the alarm is sounded, and the radio mode is set.
Use the manual tuning, seek, or auto memory functions to tune in another station.
In the seek mode:
The set automatically searches for RDS stations which are also traffic information broadcast stations. In this case, it searches for stations broadcasting other programs.

11. If you no longer want to hear traffic information, cancel the traffic information mode to return to normal radio reception.

OPERATION

● TAPE PLAYER OPERATION

Press the POWER on/off switch ㉞ to turn the unit on and press the TAPE (▶/II) button ⑪ to access the tape mode.

Dolby* B/C Noise Reduction
Before playing a cassette tape, check to see if it is encoded with Dolby B or C noise reduction. Press the Dolby NR B or C button (⑯ or ⑭) when playing a Dolby NR encoded tape. The Dolby NR B or C indicator (⑯ or ⑭) on the button will illuminate.

Cassette Loading
1. Insert a prerecorded cassette tape into the Cassette Loading Slot ④ with the open side facing to your right.
2. If the cassette tape is not completely loaded into the deck, lightly press the cassette into the slot.

Eject
Press the Eject button ⑤ to eject the cassette from the tape mechanism.

Pause
To temporarily stop playback, press the TAPE (▶/II) button ⑪. To resume playback, press the same button again.

Playback
1. Insert a prerecorded cassette tape with the open side facing right. The playback begins immediately.
2. If a cassette tape is already loaded in the unit, press the TAPE (▶/II) button ⑪ to start playback.
3. To stop tape play, press the Eject button ⑤ or turn the power off with the POWER on/off switch ㉞.

NOTE:
Push the TUNE switch ⑨ with the tape played in the A.P.I. or T. INFO mode, and the unit will be set to the TUNER mode and the tuning is possible.

True Fast Forward and Rewind
1. Press the FF switch ⑦ to advance the tape quickly. Press the REW switch ⑥ to rapidly run the tape backward. The deck will perform these functions correctly regardless of the tape play direction.
2. To disengage the FF or REW function, press the TAPE (▶/II) button ⑪.

Music Sensor
1. Press the Music Sensor (M.S.) button ⑫ and its indicator will light up.
2. Push the FF switch ⑦ to advance to the beginning of the next musical track. Press the REW switch ⑥ to go back to the beginning of the current musical track.
3. The tape deck searches forward (or back) until it senses a blank section on the tape and begins playback at that point.

NOTE:
The Music Sensor cannot detect blank sections of less than three seconds.

OPERATION

Auto Reverse
When the tape is played or fast-forwarded to the end, the tape transport automa reverses the tape direction and playback begins.

Manual Reverse
To manually change playback direction (switch between side A and side B), press PROG button ⑬.

REPEAT
1. Insert the cassette tape and begin playback.
2. When you find a selection you would like to repeat, press the REPEAT button ㉜ the REPEAT indicator appear in the display. This selection will be continuously repeated until the REPEAT function is disengaged.
3. To cancel the repeat function, press the REPEAT button ㉜ again. The REPEAT indicator will disappear.

SCAN
1. Press the SCAN button ㉛ and the deck will play the first 10 seconds of each selection. This feature is convenient when searching for a particular selection or tape.
2. Once you have located your desired selection, press the SCAN button ㉛ again defeat this function.

Blank SKIP
1. Press the B. SKIP button ⑰ during playback to skip over any blank sections of t lasting 15 seconds or more.
2. To cancel the Blank Skip function, press the B. SKIP button ⑰ again.

Return EJECT
1. Insert the cassette tape and begin playback.
2. Press the R. EJECT button ⑮ during one of the following modes and the casse will automatically eject when:
   - Playback mode; After both sides A and B have been played.
   - Fast Forward mode; After the other side has been played.
   The R. EJECT indicator ⑮ on that button will light.
3. To cancel the Return Eject mode, press the R. EJECT button ⑮ again.

Head Cleaning
When playback sound quality begins to deteriorate, it is time to clean the tape he Insert a special head cleaning cassette into the tape deck and allow it to run for approximately 1 minute to remove any foreign matter. There are special cleaning cassettes that also clean the capstans and pinch rollers. Please contact your author Alpine dealer for information about these cleaning devices.

OPERATION

YER OPERATION

OWER on/off switch ㉔ to turn the unit on and press the TAPE (▶/II) ccess the tape mode.

Noise Reduction
ing a cassette tape, check to see if it is encoded with Dolby B or C noise ss the Dolby NR B or C button (⑯ or ⑭) when playing a Dolby NR encoded by NR B or C indicator (⑯ or ⑭) on the button will illuminate.

ding
erecorded cassette tape into the Cassette Loading Slot ④ with the open to your right.
ette tape is not completely loaded into the deck, lightly press the cassette ot.

ject button ⑤ to eject the cassette from the tape mechanism.

rily stop playback, press the TAPE (▶/II) button ⑪. To resume playback, e button again.

erecorded cassette tape with the open side facing right. The playback nediately.
te tape is already loaded in the unit, press the TAPE (▶/II) button ⑪ to ack.
pe play, press the Eject button ⑤ or turn the power off with the POWER tch ㉔.

JNE switch ⑨ with the tape played in the A.P.I. or T. INFO mode, and the : to the TUNER mode and the tuning is possible.

ward and Rewind
FF switch ⑦ to advance the tape quickly. Press the REW switch ⑥ to the tape backward. The deck will perform these functions correctly of the tape play direction.
ige the FF or REW function, press the TAPE (▶/II) button ⑪.

Music Sensor (M.S.) button ⑫ and its indicator will light up.
F switch ⑦ to advance to the beginning of the next musical track. Press witch ⑥ to go back to the beginning of the current musical track.
eck searches forward (or back) until it senses a blank section on the tape playback at that point.

ensor cannot detect blank sections of less than three seconds.

OPERATION

Auto Reverse
When the tape is played or fast-forwarded to the end, the tape transport automatically reverses the tape direction and playback begins.

Manual Reverse
To manually change playback direction (switch between side A and side B), press the PROG button ⑬.

REPEAT
1. Insert the cassette tape and begin playback.
2. When you find a selection you would like to repeat, press the REPEAT button ㉜ until the REPEAT indicator appear in the display. This selection will be continuously repeated until the REPEAT function is disengaged.
3. To cancel the repeat function, press the REPEAT button ㉜ again. The REPEAT indicator will disappear.

SCAN
1. Press the SCAN button ㉛ and the deck will play the first 10 seconds of each selection. This feature is convenient when searching for a particular selection on a tape.
2. Once you have located your desired selection, press the SCAN button ㉛ again to defeat this function.

Blank SKIP
1. Press the B. SKIP button ⑰ during playback to skip over any blank sections of tape lasting 15 seconds or more.
2. To cancel the Blank Skip function, press the B. SKIP button ⑰ again.

Return EJECT
1. Insert the cassette tape and begin playback.
2. Press the R. EJECT button ⑮ during one of the following modes and the cassette tape will automatically eject when:
   - Playback mode; After both sides A and B have been played.
   - Fast Forward mode; After the other side has been played.

   The R. EJECT indicator ⑮ on that button will light.
3. To cancel the Return Eject mode, press the R. EJECT button ⑮ again.

Head Cleaning
When playback sound quality begins to deteriorate, it is time to clean the tape head. Insert a special head cleaning cassette into the tape deck and allow it to run for approximately 1 minute to remove any foreign matter. There are special cleaning cassettes that also clean the capstans and pinch rollers. Please contact your authorized Alpine dealer for information about these cleaning devices.

OPERATION

● **CD OPERATION**

The following instructions apply only to systems that incorporate the Alpine 5952 or 5952S CD Shuttle with 7294R.

Turn the unit on and access the CD mode by pressing the DISC (▶/II) button ⑧.

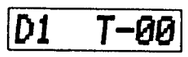
Initial System Turn-On
When operating the system for the first time after installation or after the vehicle's battery has been disconnected and reconnected, press the Reset switch ㉝ with a sharp pencil or other pointed object.

CD Display Switching
In the CD mode, the display will show the Disc and Track Number (Fig. 1) or the Elapsed Time (Fig. 2). Press the DISP switch ⑨ to select between the Disc/Track number and the Elapsed Time indicators.

Fig. 1 Fig. 2

NOTE:
In the A.P.I. or T. INFO mode, even if the DISP switch ⑨ is pushed, the display can not be switched. The mode will be set to the TUNER mode and the tuning is possible.

Normal Play
1. Press the DISC (▶/II) button ⑧.
2. The Digital Display ⑱ will show "T-00" for a second, then "T-01" will be displayed and the first track on the first disc will begin playback.
3. After the last track on the last disc is played back, the pickup will return to the beginning of the first track of the first disc and begin playback from that point.



Pause
While the disc is playing, press the DISC (▶/II) button ⑧ to temporarily stop playback. The Digital Display ⑱ will show "PAU". To resume playback, press the DISC button (▶/II) ⑧ again.

Music Sensor (Skip)
This feature allows you to access the beginning of your musical track selection simply and quickly. It is functional in the play or pause mode. The Digital Display ⑱ shows the track number you have selected.

- To advance to the next track on the disc, press the ▶▶| side of the M.S. · CD switch ⑦.

1. Playback stops, and the pickup moves up to the beginning of the next track. That track number appears in the Digital Display ⑱.

2. Playback begins immediately.
3. If you wish to access a track further ahead on the disc, continue pressing the ▶▶| side of the M.S. · CD switch ⑦ until you reach the track of your choice.

- To replay the track that is currently playing, press the |◀◀ side of the M.S. · CD switch ⑥.

1. Playback stops, and the pickup moves back to the beginning of the current track. The track number in the Digital Display ⑱ remains the same.
2. Playback begins immediately from the beginning of the track.
3. If you access a track further towards the beginning of the disc, continue pressing the |◀◀ side of the M.S. · CD switch ⑥ until you reach the track of your choice.

Direct Disc Access

1. Press one of the Direct Disc Access buttons (⑫ — ⑰) to select from discs 1 — 6. The disc and track numbers will appear in the display.
2. Press the M.S. UP ⑦ or DN ⑥ switch for musical track selection.

Fast Forward/Fast Reverse

The Fast Forward/Fast Reverse feature works in both play and pause modes.

1. To rapidly move the pickup forward, press the M.S. UP (▶▶|) switch ⑦ and hold it down for more than one second.
2. To rapidly move the pickup backward, press the M.S. DN (|◀◀) switch ⑥ and hold it down for more than one second.
3. Continue holding the UP (▶▶|) ⑦ or DN (|◀◀) ⑥ switch until you reach the point where you want to resume playback, then release the switch.
4. When the pickup reaches the end of the disc, the unit will go into the Pause mode.

REPEAT (One/All)

This feature allows you to continuously repeat a single track or one entire disc.

To Repeat a Single Track

1. Locate the music track of your choice using the M.S. UP ⑦ or DN ⑥ switch.
2. Press the REPEAT button ㉜.
   The indicator of ONE will illuminate.
   The music track will be played back repeatedly.

3. To stop repeat play, press the REPEAT button twice. The indicator switches from ONE to ALL and the illumination will be off.

To Repeat an Entire Disc

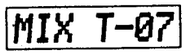
1. While playing a disc, press the REPEAT button ㉜ until ALL indicator is illuminated.
2. The disc will be played back repeatedly.
3. To stop repeat play, press the REPEAT button ㉜ once. The indicator illumination will be off.

Disc Scan

Press the SCAN button ㉛ and the unit will playback the first 10 seconds of each track in succession. This function is useful in searching ahead on a disc for a specific selection. Pressing the SCAN button ㉛ a second time deactivates the function.

M.I.X. (Random Play)

Press the M.I.X. button ③ while the unit is in the play or pause mode. Musical tracks on the selected disc will be played back in a random sequence generated by the microprocessor. After all the tracks on the disc have been played back once, the player will begin a new random sequence.



Q.R.B. Minder

This unit is equipped with a built-in theft prevention reminder system. If the unit is not removed from the Quick Release Bracket after turning the ignition key off, a beeper will sound as a reminder to remove the unit.

Whether the ignition is on or off, the unit may beep when it is being removed from the dash.

You can switch the Q.R.B. Minder system on or off.

1. Press the TUNE switch ⑨ for 3 seconds.
2. Press the Preset No. 4 button ⑰. The display switches as shown below:

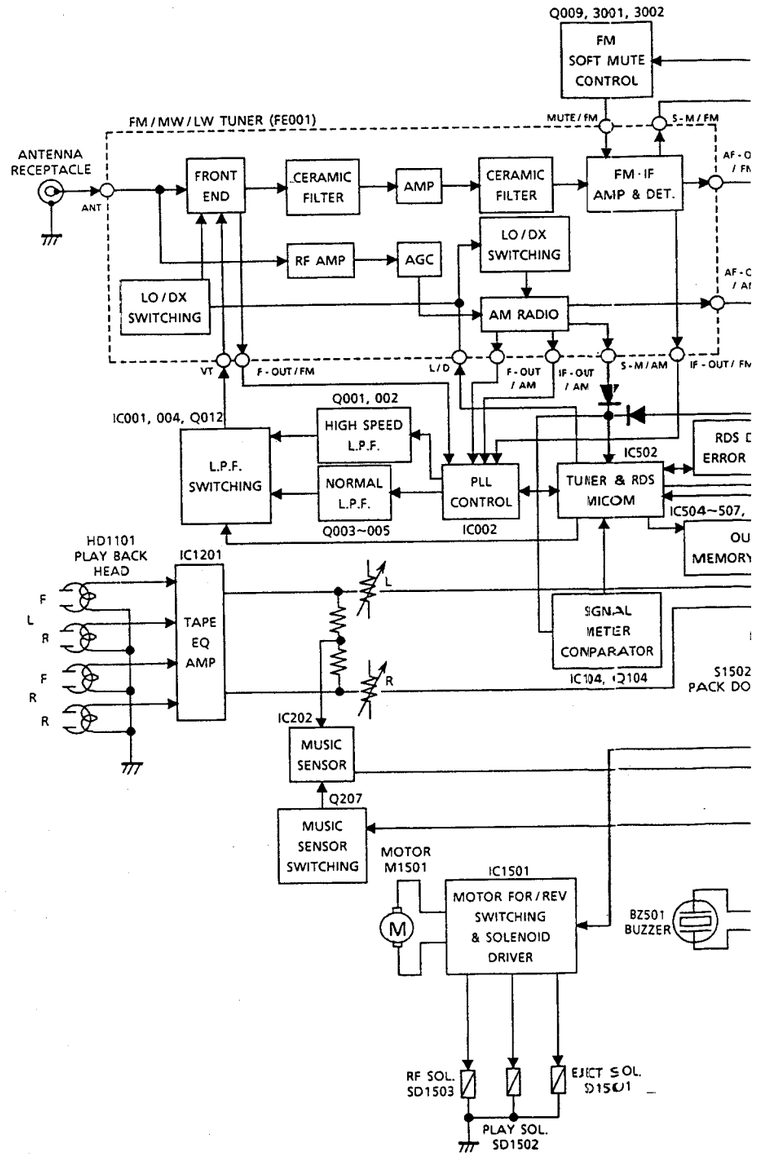
: Q.R.B. Minder is on.

: Q.R.B. Minder is off.

NOTE:

The unit is initially set with the Q.R.B. Minder system on. If the vehicle's engine does not start for over 2 seconds after turning the ignition key on, the Q.R.B. Minder system may be triggered.

Block Diagram



OPERATION

AN button ㉛ and the unit will playback the first 10 seconds of each track
his function is useful in searching ahead on a disc for a specific selection.
AN button ㉛ a second time deactivates the function.

SCN T-07

1 Play)
.X. button ③ while the unit is in the play or pause mode. Musical tracks on
c will be played back in a random sequence generated by the
After all the tracks on the disc have been played back once, the player
random sequence.

MIX T-07

quipped with a built-in theft prevention reminder system. If the unit is not
he Quick Release Bracket after turning the ignition key off, a beeper will
nder to remove the unit.
ignition is on or off, the unit may beep when it is being removed from the

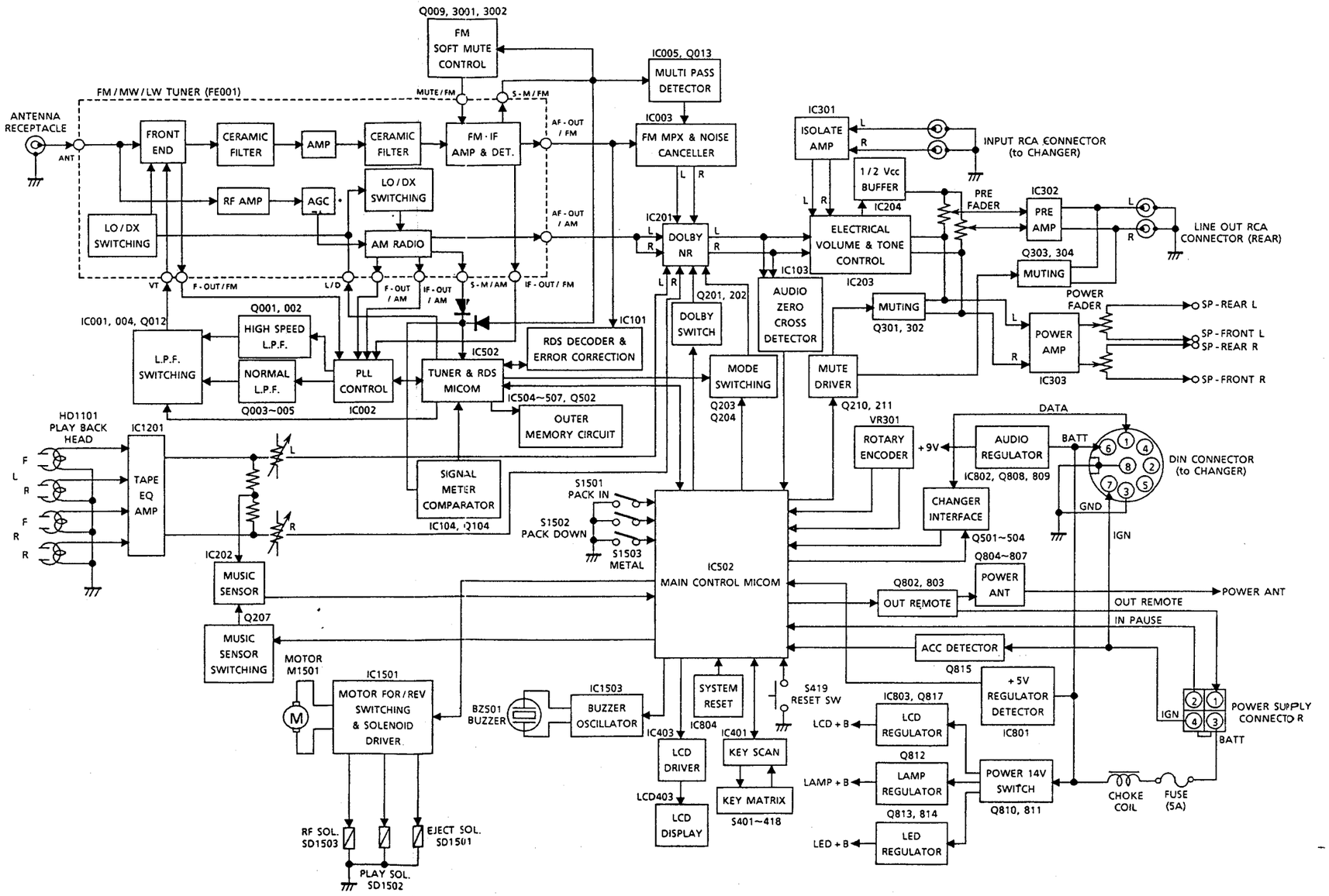
ch the Q.R.B. Minder system on or off.
JNE switch ⑨ for 3 seconds.
eset No. 4 button ⑰. The display switches as shown below:

QRBM ON : Q.R.B. Minder is on.

QRBM OFF : Q.R.B. Minder is off.

tially set with the Q.R.B. Minder system on. If the vehicle's engine does
r 2 seconds after turning the ignition key on, the Q.R.B. Minder system
d.

Block Diagram



Disassembly Instructions

1. Removal of Nosepiece

(1) After removal of Top Cover, remove two Control Knobs (Mode, Fader) as shown in Figure 1.
(2) Remove five Hooks (A) as shown in Figures 1 and 2.

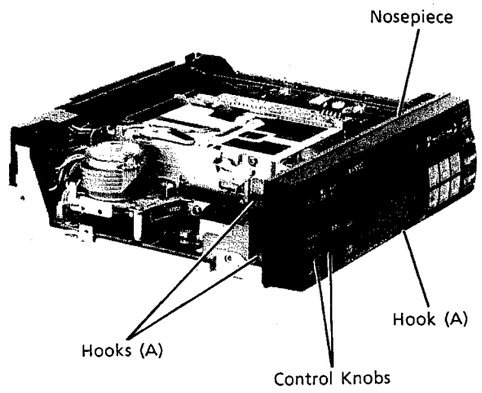


Figure 1

2. Removal of Cassette Deck

(1) After removal of Nosepiece, remove four screws marked "×" as shown in Figure 3.
(2) Disconnect one connector from the Main P.C.Board, while lifting up the Cassette Deck.

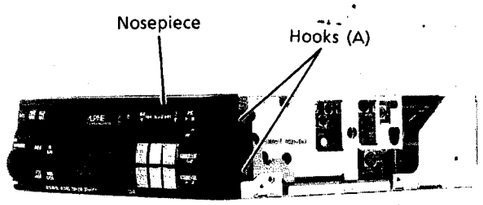


Figure 2

3. Removal of Bottom Chassis

(1) After removal of the Cassette Deck, remove eight screws marked "△" as shown in Figures 3 and 6.

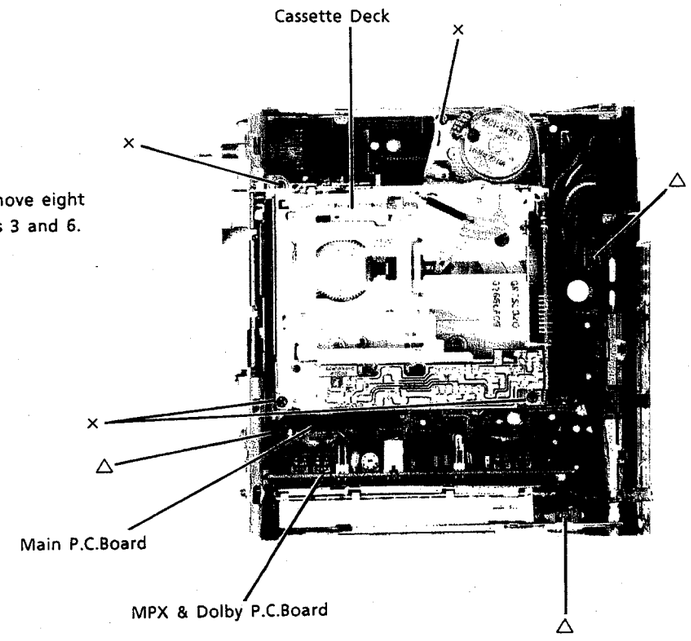


Figure 3

4. Removal of Main P.C.Board and Front P.C.Board

(1) After removal of Bottom Chassis, remove two Hooks (B) and two screws marked "◇" as shown in Figure 4.
(2) Disconnect 14-pins Connector from Main P.C.Board.
※ To make it easy, insert a thim stick object into an aperture and push out Front P.C.Board as shown in Figure 5. Then Front P.C.Board will be removed.

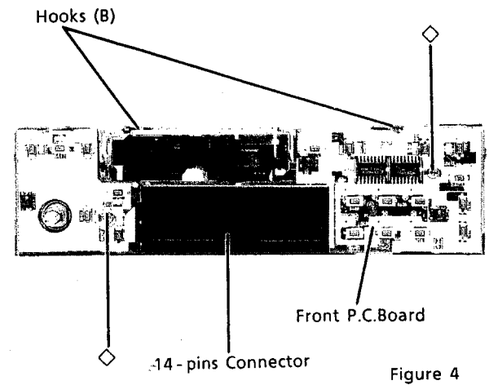


Figure 4

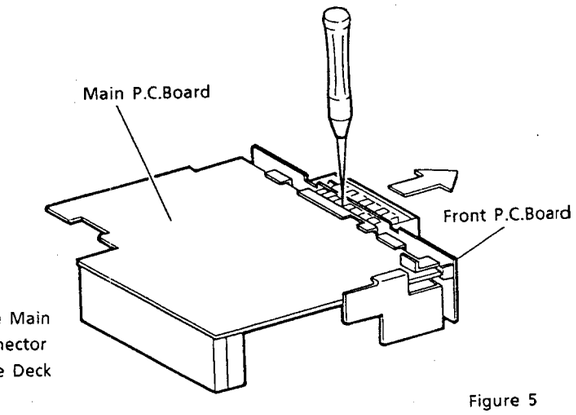


Figure 5

※ Notice for assembly the Cassette Deck and Front P. C. Board into the unit.
Give care to the 14-pins Connector between the Main and the Front P. C. Boards and the 17-pins Connector between the Main P. C. Board and the Cassette Deck not to bend them when assemblying the parts.

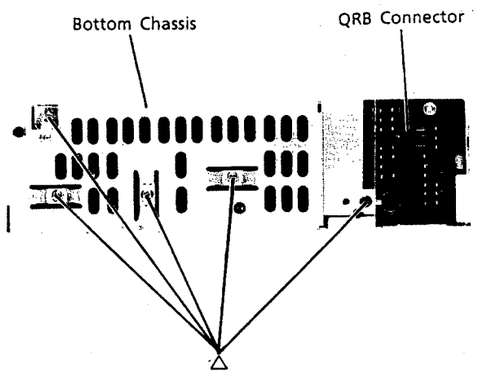


Figure 6

Adjustment Procedures

1. FM Section

(1) Dummy Antenna Circuit

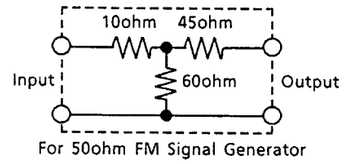


Figure 7

(2) Connections

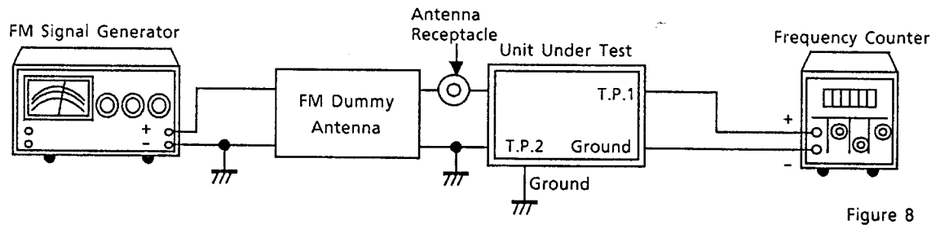


Figure 8

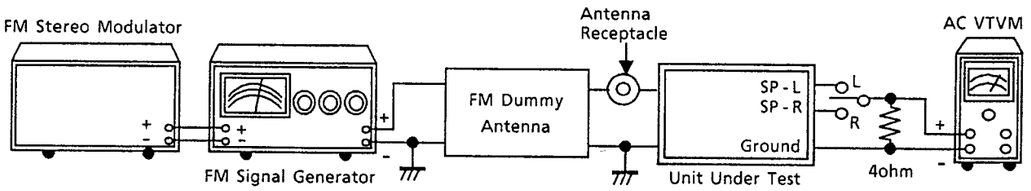


Figure 9

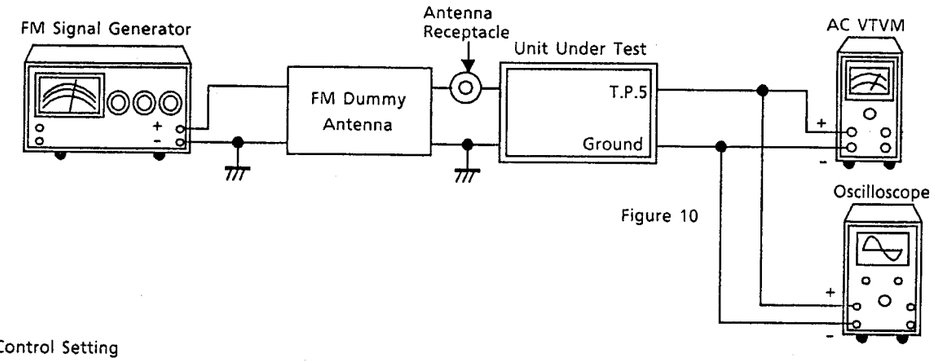
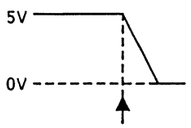


Figure 10

(3) Control Setting

Power Switch	ON
Fader Control	Front
Balance Control	Electrical Center
Treble/Bass Control	Electrical Center
Band Switch	FM
Others	OFF

(4) Adjustment Procedures

Step	Description	Connection	Signal Generator	Dial Control	Test Point	Adjustment
1	VCO Adjustment	Figure 8	98.1MHz 72dB (400Hz Mod. 22.5kHz Dev.)	98.1MHz	T.P.1	Adjust VR002 to read 19±0.05kHz on Counter at T.P.1.
2	Stereo Separation Adjustment (L)	Figure 9	98.1MHz 72dB (Stereo 1kHz Mod. L only)	98.1MHz	Speaker Output	Adjust VR003 for Rch output to be minimumand confirm Lch and Rch output level difference is more than 25dB.
3	Stereo Blend Adjustment (L)	Figure 9	98.1MHz 46dB±3dB (Stereo 1kHz Mod. L only)	98.1MHz	Speaker Output	Adjust VR004 for Lch and Rch output level difference to be 8dB.
4	Stereo Separation Adjustment (R)	Figure 9	98.1MHz 72dB (Stereo 1kHz Mod. R only)	98.1MHz	Speaker Output	Proceed same adjustment under Step 2 by alternating Lch and Rch.
5	Stereo Blend Adjustment (R)	Figure 9	98.1MHz 46dB (Stereo 1kHz Mod. R only)	98.1MHz	Speaker Output	Proceed same adjustment under Step 3.
6	RDS Adjustment	Figure 10	98.1MHz 47dB (Mod. : OFF)	98.1MHz	T.P.5	Adjust VR101 so that output waveform at T.P.5 changes High level (5V) to Low level (0V) as shown in figure below. Output Waveform at T.P.5 

2. Tape Player

(1) Connection

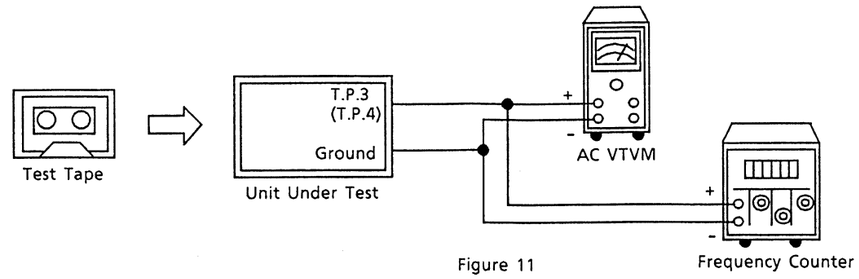


Figure 11

(2) Control Setting

Power Switch ..... ON
Fader Control ..... Front
Balance Control ..... Electrical Center
Treble / Bass Control ..... Electrical Center
Others ..... OFF

(3) Adjustment Procedures

Step	Description	Test Tape	Connection	Test Point	Adjustment Point	Adjustment
1	Head Azimuth Adjustment	MTT-114NB (14kHz)	Figure 11	T.P.3 (L) T.P.4 (R)	Head Azimuth Adjustment Screws (Figure 12)	Adjust for Max. and same level output at Forward and Reverse positions.
2	Dolby Level Adjustment	MTT-150 (400Hz)	Figure 11	T.P.3 (L) T.P.4 (R)	VR201 (L) VR202 (R)	Adjust for 388±10mV at T.P.3 (L) and T.P.4 (R).
3	Tape Speed Adjustment	MTT-111N (3kHz)	Figure 11	T.P.3 (L) or T.P.4 (R)	Tape Speed Adjustment (Figure 13)	Adjust for 2,907 to 3,090Hz at T.P.3 (T.P.4).

Adjustment Locations

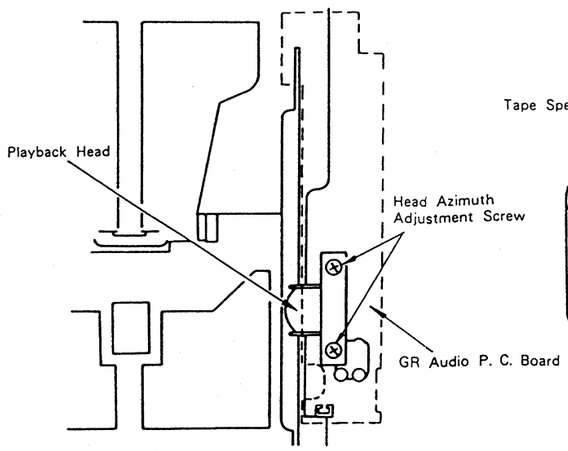


Figure 12

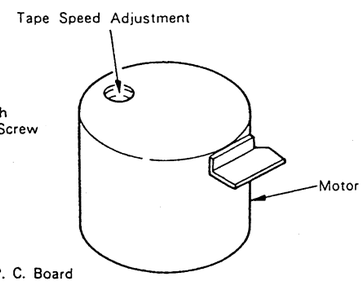
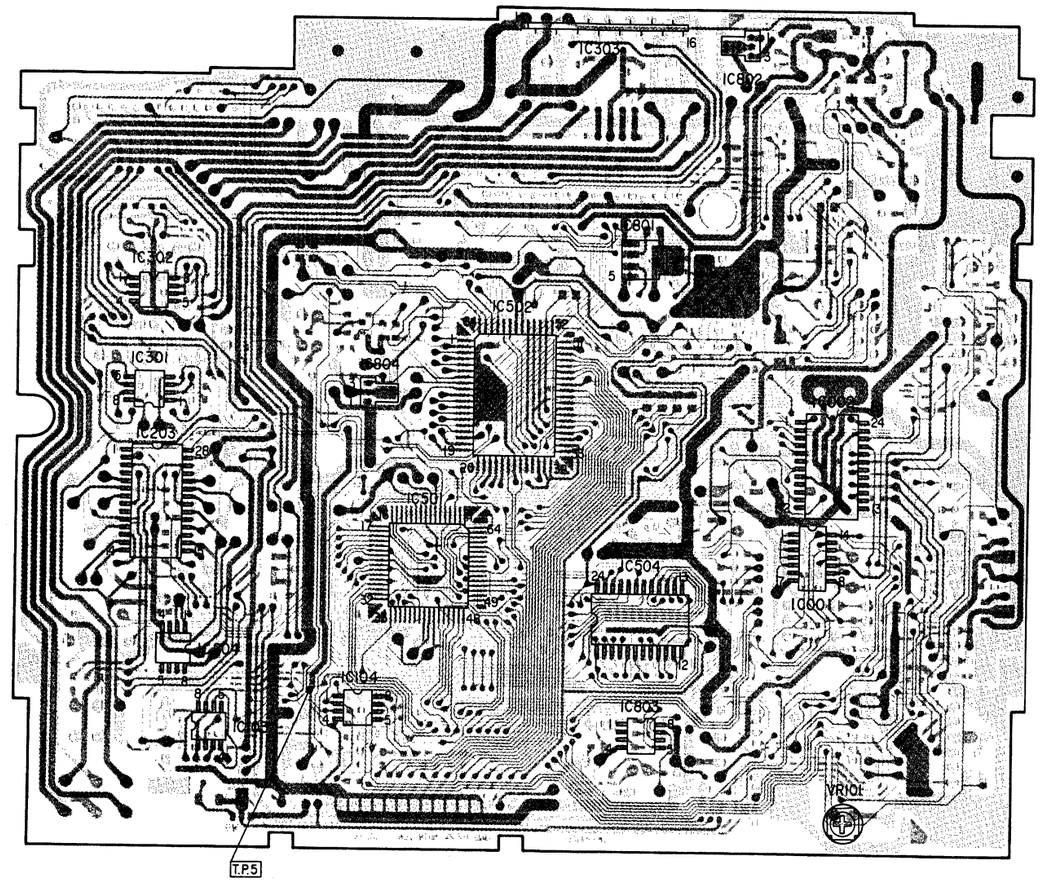
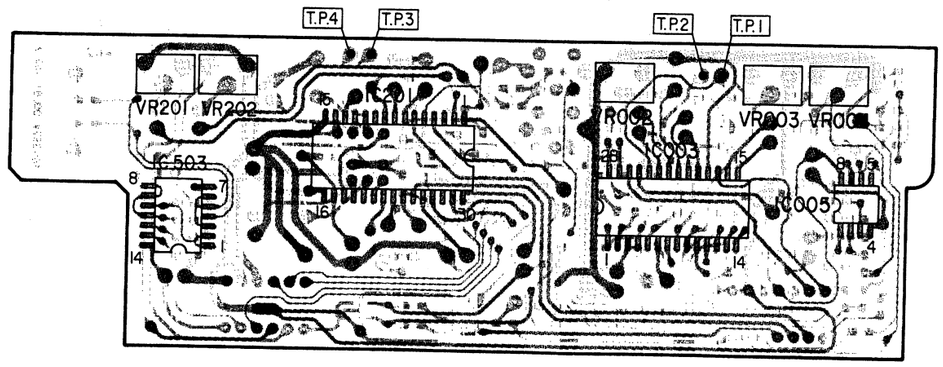


Figure 13

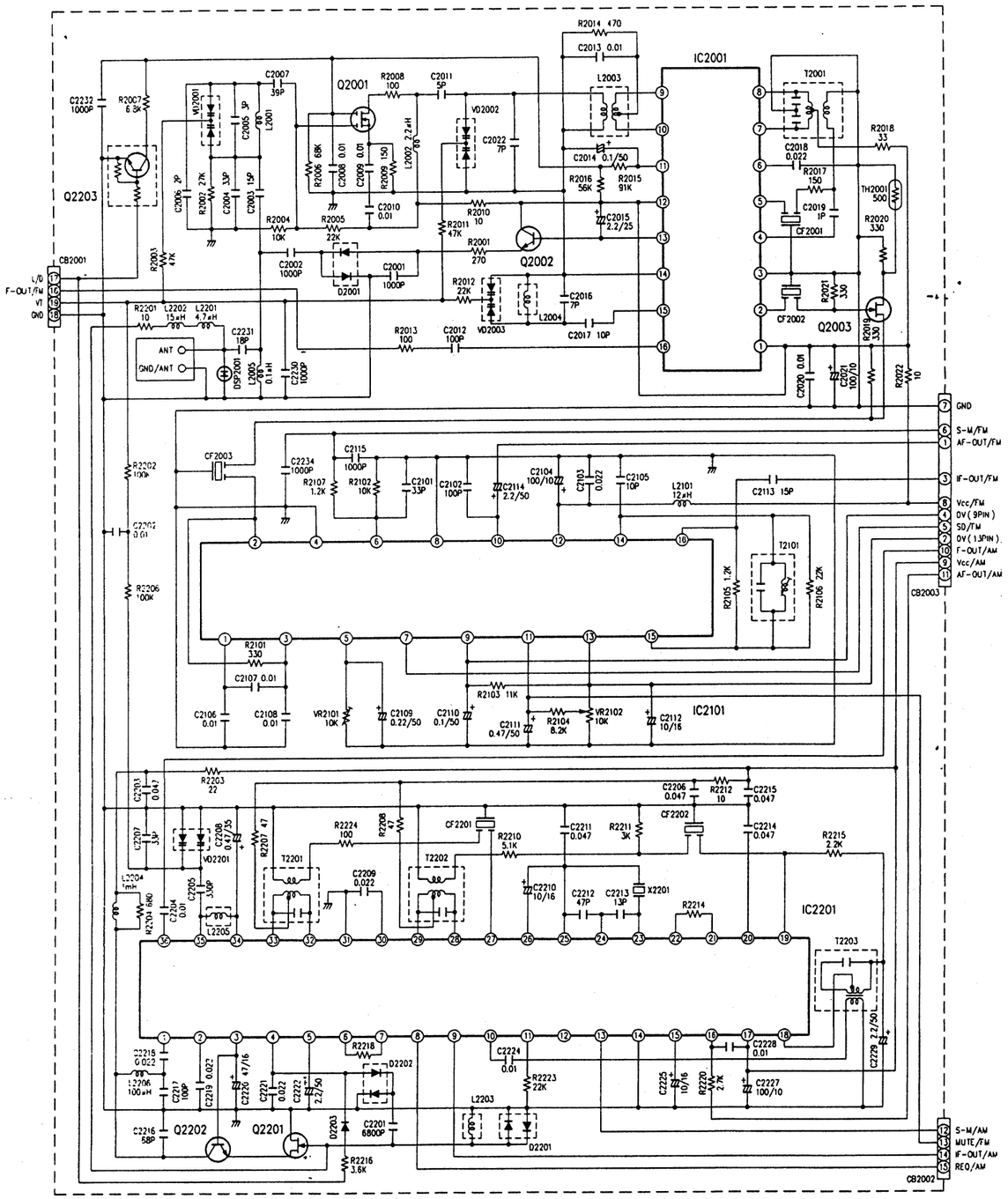


Main P. C. Board (Component Side)



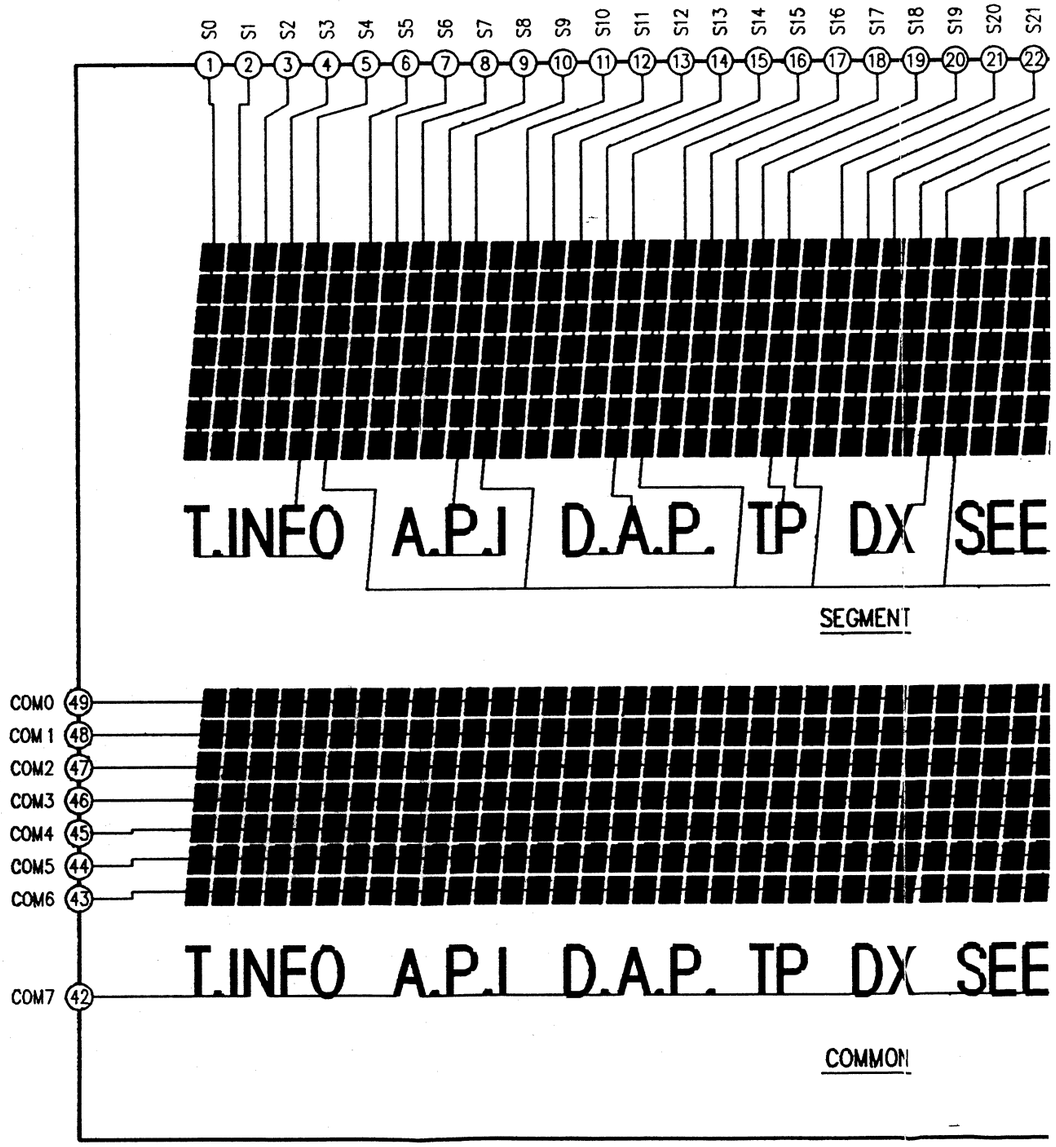
MPX & DOLBY P. C. Board (Component Side)

Tuner Schematic Diagram

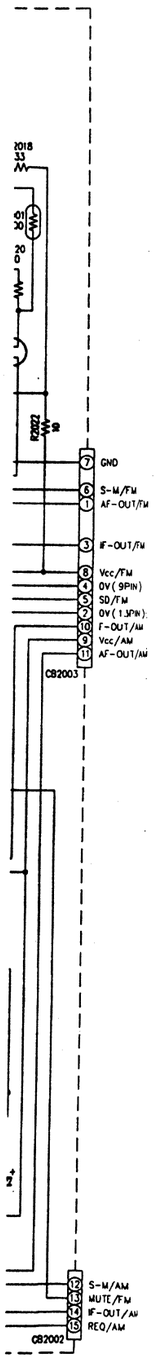


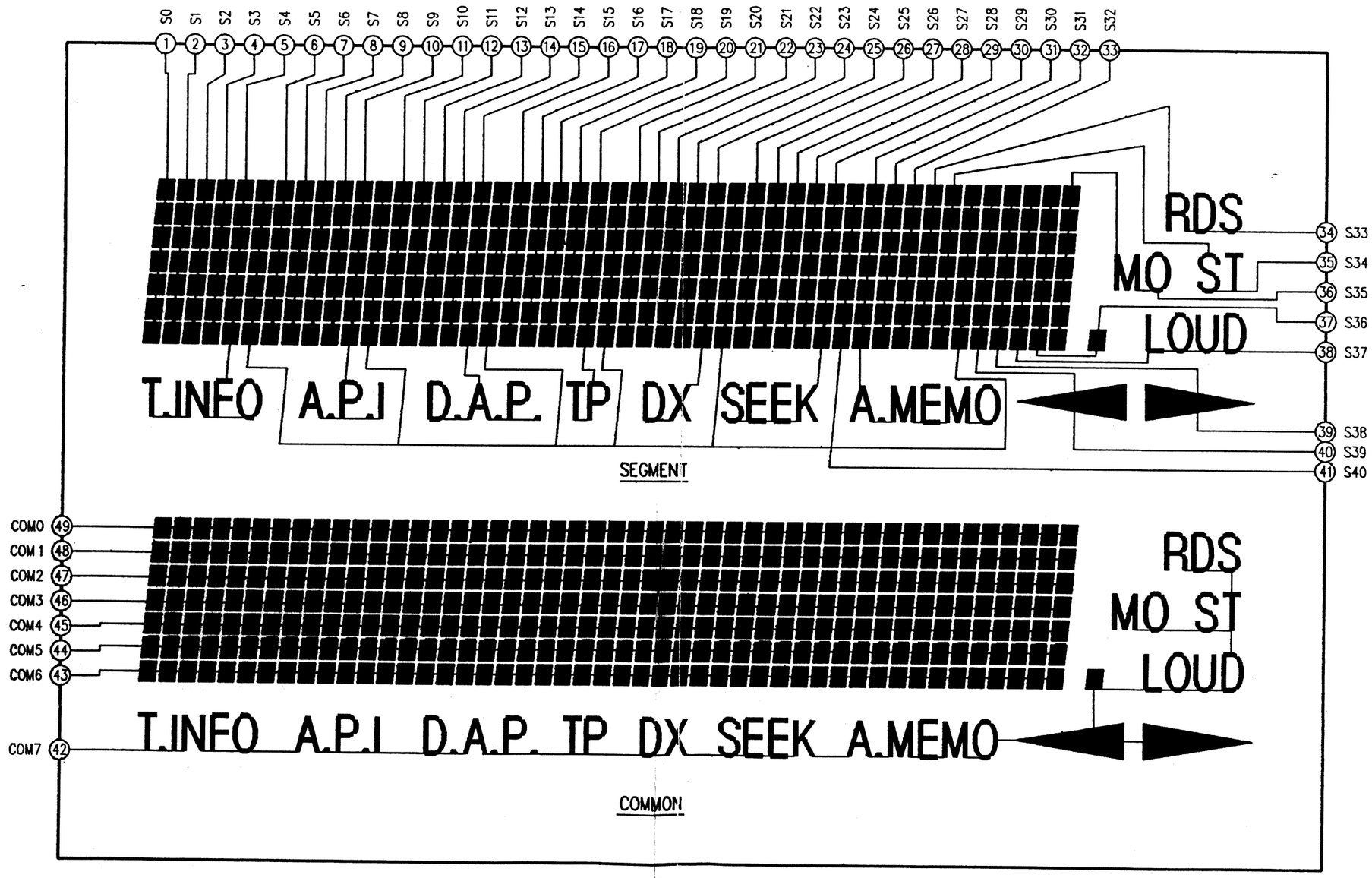
7294R

FL Display


S0 S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 S17 S18 S19 S20 S21
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
T.INFO A.P.I D.A.P. TP DX SEE
SEGMENT
COM0 49
COM1 48
COM2 47
COM3 46
COM4 45
COM5 44
COM6 43
COM7 42
T.INFO A.P.I D.A.P. TP DX SEE
COMMON

FL Display


2018
82
5W
R2022
1W
7 GND
6 S-M/FM
1 AF-OUT/FM
3 IF-OUT/FM
8 Vcc/FM
4 0V (9PIN)
5 SD/FM
2 0V (13PIN)
10 I-OUT/AM
9 Vcc/AM
11 AF-OUT/AM
CB2003
13 S-M/AM
14 MUTE/FM
15 IF-OUT/AM
16 REQ/AM
CB2002


S0 S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 S17 S18 S19 S20 S21 S22 S23 S24 S25 S26 S27 S28 S29 S30 S31 S32
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
RDS
MO ST
LOUD
T.INFO A.P.I D.A.P. TP DX SEEK A.MEMO
34 S33
35 S34
36 S35
37 S36
38 S37
39 S38
40 S39
41 S40
SEGMENT
COM0 49
COM1 48
COM2 47
COM3 46
COM4 45
COM5 44
COM6 43
COM7 42
RDS
MO ST
LOUD
T.INFO A.P.I D.A.P. TP DX SEEK A.MEMO
COMMON

Description of IC Terminals

●25699W23 : IC501

No.	Symbol	I/O	Terminal Description
1	$\overline{RD}$	O	S. RAM CE1 control output.
2	FM LEVEL	O	FM level control output.
3	$\overline{DTS\ MUTE}$	O	Audio mute output.
4	$\overline{7071\ RESET}$	O	LC7071 reset output.
5	50K REF	O	High output when REF frequency becomes 50kHz in FM mode.
6	$\overline{RESET}$	I	System reset input Low : Reset.
7	X2	O	OSC output for system clock.
8	X1	I	OSC input for system clock.
9	V_{SS}	–	GND
10	A15	O	S. RAM CE1 control output.
11	A14	O	S. RAM CE1 control output.
12	NC		Open.
13	NC		Open.
14	NC		Open.
15	A10	O	S. RAM control output.
16	A9	O	S. RAM control output.
17	A8	O	S. RAM control output.
18	AD7	I/O	S. RAM communication data input and output.
19	AD6	I/O	S. RAM communication data input and output.
20	AD5	I/O	S. RAM communication data input and output.
21	AD4	I/O	S. RAM communication data input and output.
22	AD3	I/O	S. RAM communication data input and output.
23	AD2	I/O	S. RAM communication data input and output.
24	V_{SS}	–	GND
25	AD1	I/O	S. RAM communication data input and output.
26	AD0	I/O	S. RAM communication data input and output.
27	A STB	O	LE control output for latch.
28	DTS STB	I	DTS standby resumption input.
29	RDS CLOCK	I	RDS clock input.
30	RDS DATA START	I	RDS data start input.
31	RDS DATA	I	RDS data input.
32	PLL DATA IN	I	PLL data input.
33	AUDIO IN	I	Audio zero cross input.
34	DTS START	I	DTS data start.
35	COMMAND	I	Command input for DTS.
36	NC		Open.
37	NC		Open.
38	CLOCK	I	Communication clock input for DTS.
39	DTS STATUS	O	Status output from DTS.
40	V_{DD}	–	Power supply.
41	V_{DD}	–	Power supply.
42	A V_{SS}	–	GND for A/D convertor.

No.	Symbol	I/O	Terminal Description
43	A V_{REF}	I	Reference voltage input for A/D convertor.
44	$\overline{ST}$	I	Stereo signal input.
45	$\overline{SK}$	I	SK signal input.
46	$\overline{RDS}$	I	RDS signal input.
47	$\overline{DK}$	I	DK signal input.
48	$\overline{SEARCH}$	I	SEARCH start detection input.
49	S. METER	I	Signal meter input.
50	NC		Open.
51	PLL CE	O	PLL CE control output.
52	PLL CLOCK	O	Sync signal output for PLL.
53	PLL DATA OUT	O	Data output for PLL.
54	$\overline{LPF\ SW}$	O	LPF switch control output.
55	IF MUTE	O	IF mute output.
56	NC		Open.
57	NC		Open.
58	LW	O	LW band switch output.
59	FM/$\overline{AM}$	O	FM/AM band switch output.
60	L/$\overline{D}$	O	SEEK sensitivity switch control output.
61	MONO	O	Stereo/Mono switch control output.
62	DTS CE	I	CE control signal input to DTS.
63	SD	I	Station detector signal input.
64	$\overline{WE}$	O	S. RAM $\overline{WE}$ control signal switch.

● 15590W32 : IC502

No.	Symbol	I/O	Terminal Description
1	RUN DET	I	GR mechanism take-up reel sensor input.
2	PACK DOWN	I	GR mechanism Pack guide position sensor input.
3	PLAY SOL	O	Output to select GR mechanism head base for ward/reverse.
4	RF SOL	O	Output to select GR mechanism PLAY/FF (REW).
5	EJECT SOL	O	GR mechanism eject solenoid drive output.
6	MOTOR CONT	O	Ouput to select GR mechanism motor rotation direction.
7	$\overline{RESET}$	I	System reset signal input.
8	X2	I	OSC input for system clock.
9	X1	O	OSC output for system clock.
10	LEVEL 0 FAST	O	Music sensor gain selection output.
11	MOTOR FAST	O	GR mechanism motor r. p. m. selection output.
12	0 MOTOR	O	GR mechanism motor rotation/stop selection output.

No.	Symbol	I/O	Terminal Description
13	F/R	O	GR mechanism audio signal FWD/REV selection output.
14	PACK IN	I	GR mechanism pack insertion sensor input.
15	GND	–	GND
16	M. S. DET	I	Tape non-signal sensor input.
17	DTS MUTE	I	DTS mute signal input.
18	NC		Open.
19	POWER CONT	O	Power control signal output.
20	$\overline{\text{RADIO}}$	O	Radio ON/OFF select output.
21	BUZZER	O	Buzzer selection output.
22	$\overline{\text{DOLBY C}}$	O	Dolby C selection output.
23	$\overline{\text{DOLBY B}}$	O	Dolby B selection output.
24	TAPE/$\overline{\text{RADIO}}$	O	Tape/Radio selection output.
25	KEY P/S	O	Parallel/serial control output for MC14014BFEL.
26	V_{SS}	–	GND
27	KEY IN	I	Serial data output for MC14014BFEL.
28	ACC	I	Accessory power supply input.
29	CHANGER DATA IN	I	CD changer bus line input.
30	$\overline{\text{POWER}}$/$\overline{\text{A. MODE}}$	I	Power ON/OFF and Audio mode sensor input.
31	GND	–	GND
32	GND	–	GND
33	GND	–	GND
34	GND	–	GND
35	CCW	I	Pulse signal input in CW direction from rotary encoder.
36	CW	I	Pulse signal input in CCW direction from rotary encoder.
37	DTS STB	O	Standby reset signal output for RDS/DTS.
38	DISP CLOCK	O	Clock output for LCD driver.
39	DTS START	O	Command sync signal output for RDS/DTS.
40	ALARM	O	Alarm signal output.
41	DTS STATUS	I	Serial data input from RDS/DTS.
42	DTS COMMAND	O	Serial data output from RDS/DTS.
43	DTS SCK	O	Communication sync signal output for RDS/DTS.
44	BATT	I	Battery power sensor input.
45	KEY SCAN DATA	O	Serial scan data output for MC14014BFEL.
46	KEY CLOCK	O	Clock signal output for MC14014BFEL.
47	DISP CS	O	Chip select output for LCD driver.
48	DISP C/D	O	Serial output which determines whether serial input data is command or data.
49	DISP RESET	O	Reset signal output for LED driver.
50	SDA	O	Serial data signal output for electronic volume.
51	SCL	O	Serial data sync signal output for electronic volume.
52	CHANGER DATA OUT	O	CD changer bass line output.
53	DTS CE	O	Standby signal output for RDS/DTS.
54	DISP/LED SI	O	Serial data signal output.
55	DISP/LED SCK	O	Serial data sync output.
56	LED LOAD	O	Data load output for LED driver.
57	V_{DD}	–	Power supply.
58	V_{DD}	–	Power supply.

No.	Symbol	I/O	Terminal Description
59	DISP BUSY	I	BUSY signal input.
60	$\overline{\text{A MUTE}}$	O	Audio mute signal output.
61	OVT REM	O	Interchange reset remote signal output.
62	OVT INT	O	Interchange reset interrupt signal output.
63	IN PAUSE	I	Audio mute signal input.
64	IN INT	I	Interchange reset interrupt signal input.

Parts Layout on P. C. Boards and Wiring Diagram (1/2)

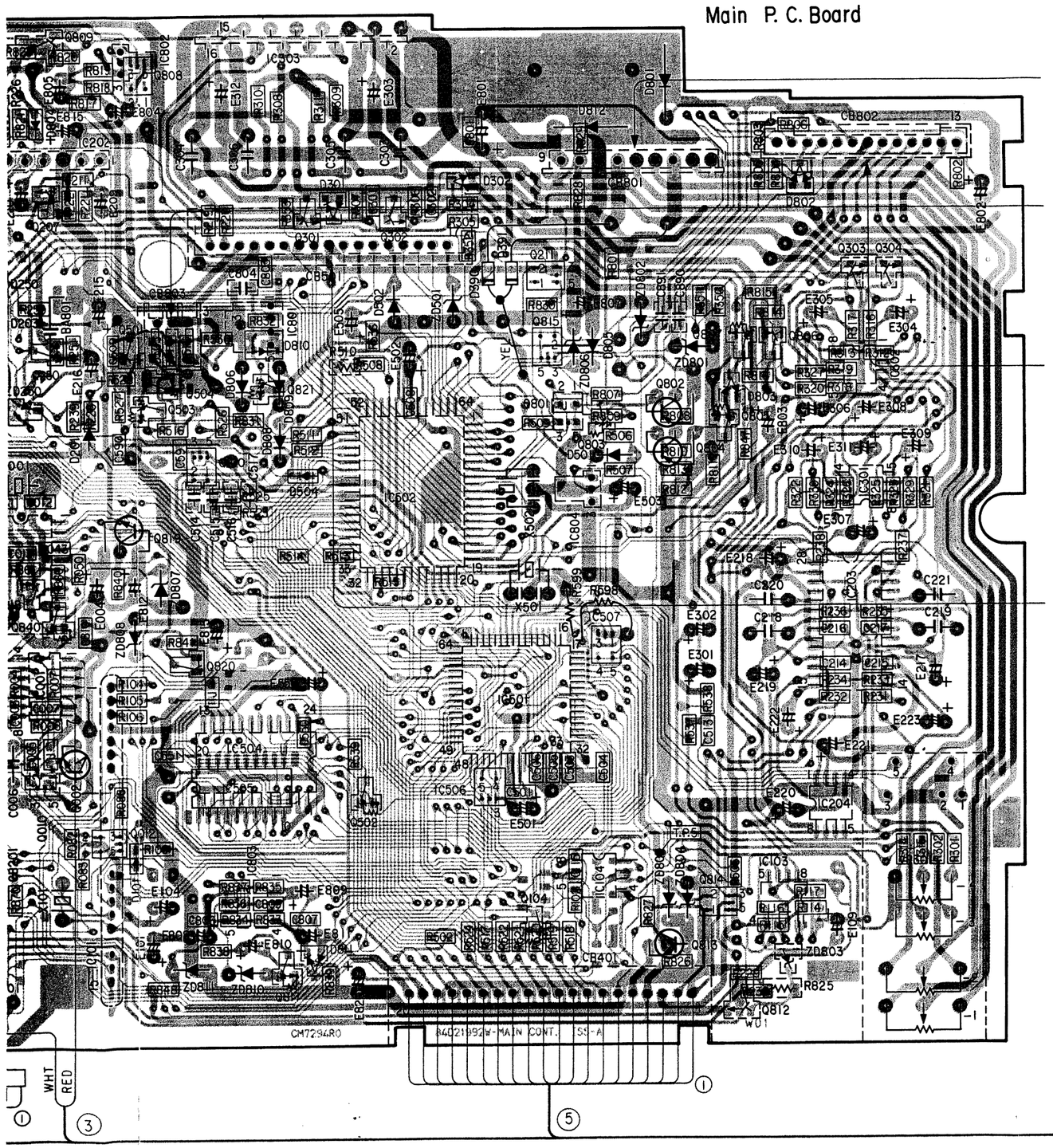
MPX & Dolby P. C. Board

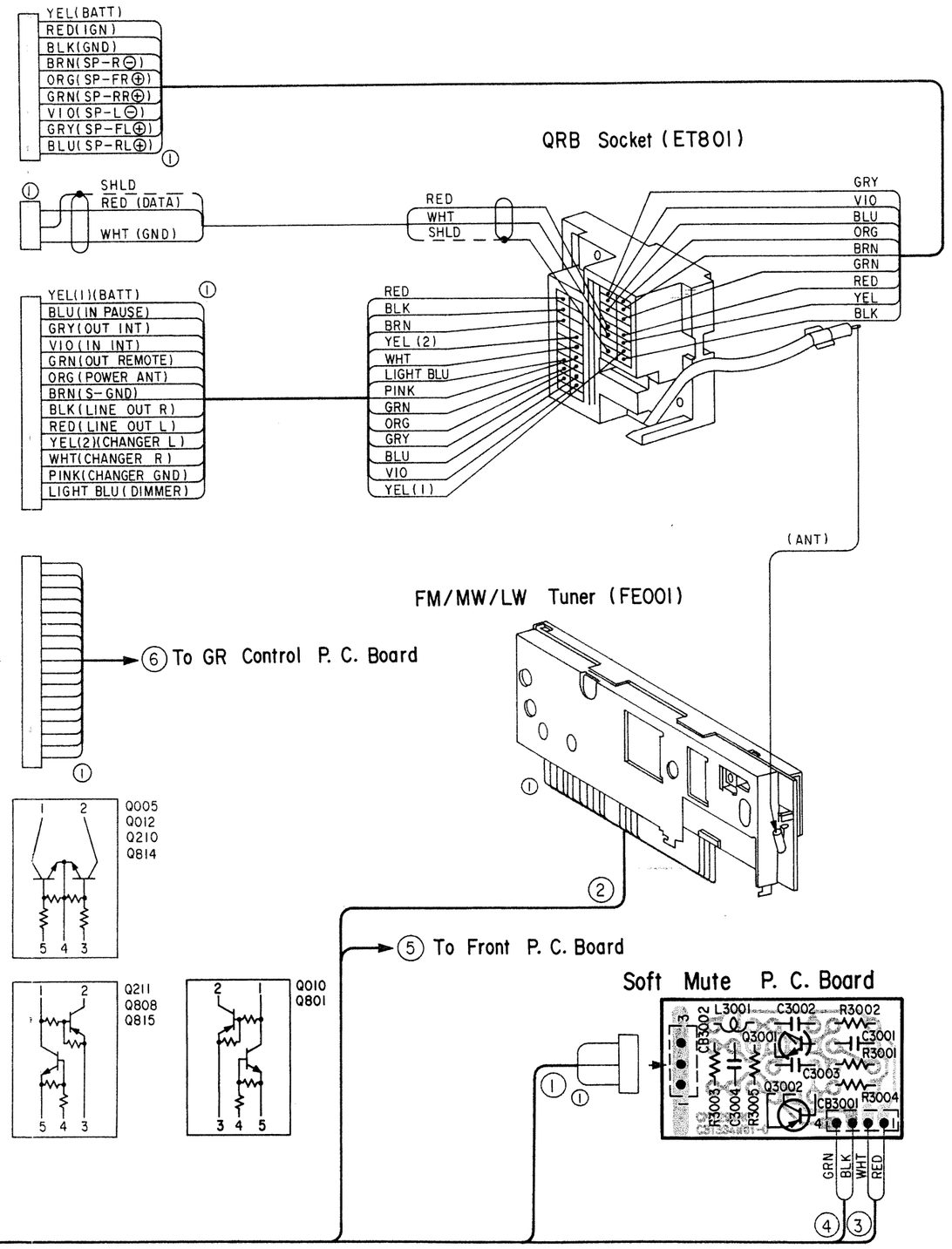
Main P. C. Board

Blue	BLU
Green	GRN
Black	BLK
Gray	GRY
White	WHT
Red	RED
Brown	BRN
Orange	ORG
Yellow	YEL
Pink	PNK
Violet	VIO
Green/White	GRN/WHT
Gray/White	GRY/WHT
Gray/Yellow	GRY/YEL
Green/Yellow	GRN/YEL
Shield	SHLD

Q205
Q206

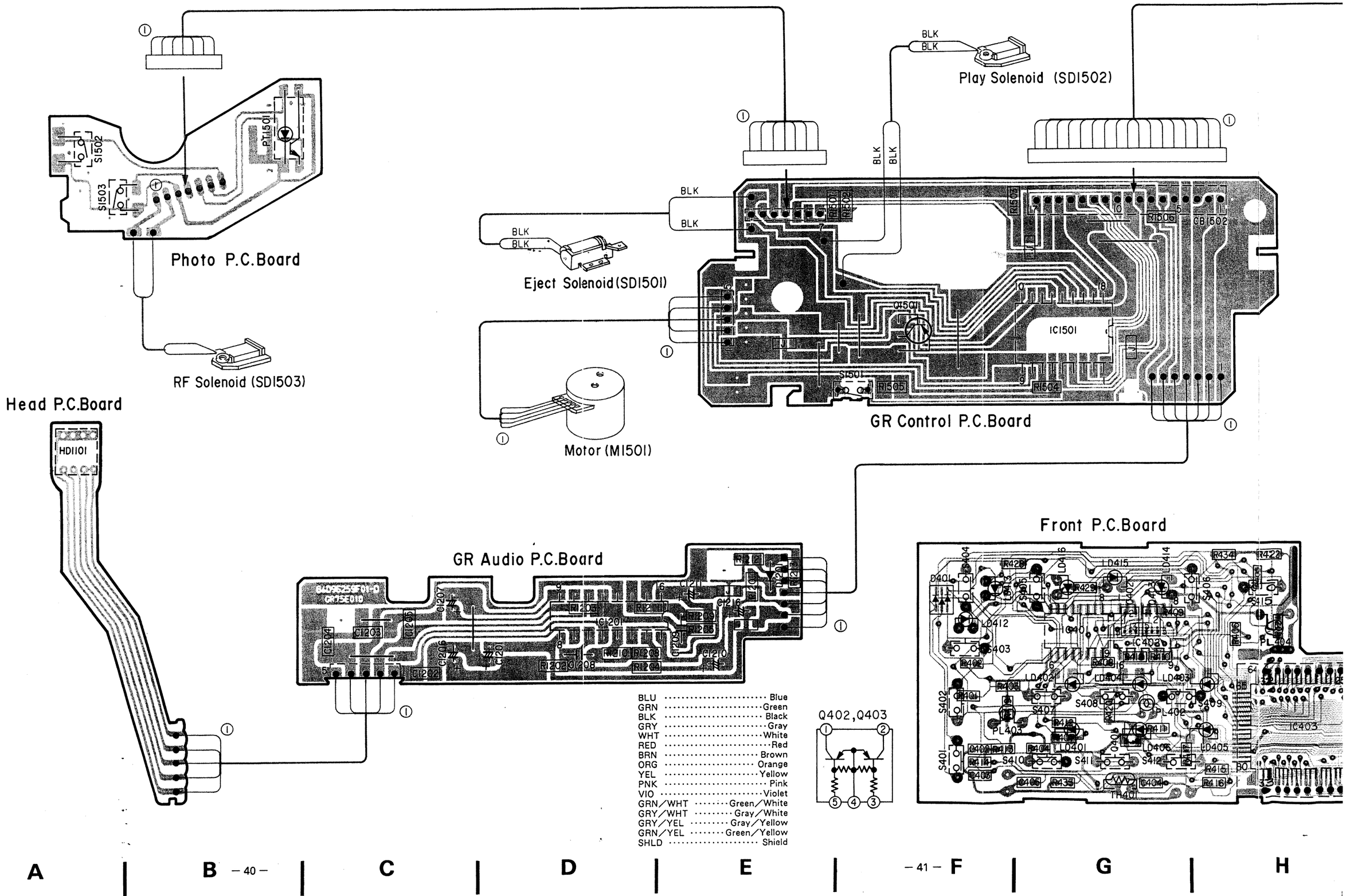
Diagram (1/2)


Main P. C. Board
CM7294R0
840219928-MAIN CONT. SS-A
WHT
RED

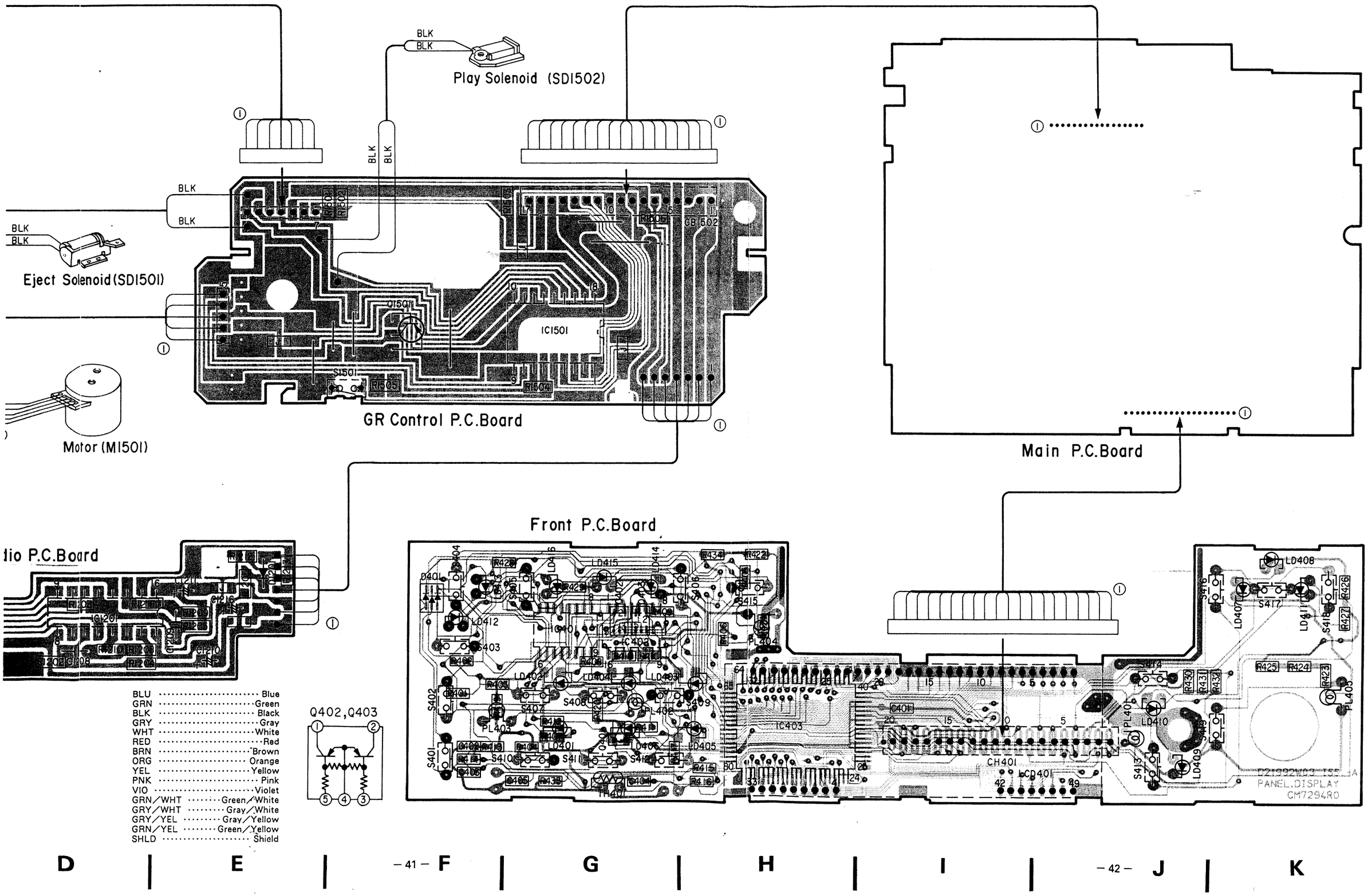

YEL(BATT)
RED(IGN)
BLK(GND)
BRN(SP-R⊖)
ORG(SP-FR⊕)
GRN(SP-RR⊕)
VIO(SP-L⊖)
GRY(SP-FL⊕)
BLU(SP-RL⊕)
SHLD
RED (DATA)
WHT (GND)
YEL(1)(BATT)
BLU(IN PAUSE)
GRY(OUT INT)
VIO(IN INT)
GRN(OUT REMOTE)
ORG(POWER ANT)
BRN(S-GND)
BLK(LINE OUT R)
RED(LINE OUT L)
YEL(2)(CHANGER L)
WHT(CHANGER R)
PINK(CHANGER GND)
LIGHT BLU(DIMMER)
⑥ To GR Control P. C. Board
Q005
Q012
Q210
Q814
Q211
Q808
Q815
Q010
Q801
QRB Socket (ET801)
RED
WHT
SHLD
GRY
VIO
BLU
ORG
BRN
GRN
RED
YEL
BLK
RED
BLK
BRN
YEL (2)
WHT
LIGHT BLU
PINK
GRN
ORG
GRY
BLU
VIO
YEL(1)
(ANT)
FM/MW/LW Tuner (FE001)
⑤ To Front P. C. Board
Soft Mute P. C. Board
L3001
C3002
R3002
C3001
R3001
C3003
Q3001
Q3002
CB3001
R3004
GRN
BLK
WHT
RED

7294R 7294R

Parts Layout on P.C.Boards and Wiring Diagram (2/2)



ıg Diagram (2/2)



Schematic Diagram (1/3)

IC	IC004	IC001	IC002	IC506 IC507	IC501	IC104 IC103	IC301
	IC101		IC204		IC504	IC505	IC203
Transistor (Q)	Q001 Q002 Q826 Q010 Q007 Q825 Q003 Q011 Q824 Q004 Q823	Q012 Q008 Q820 Q006 Q819	Q005 Q840 Q818 Q210	Q211 Q502	Q104		

Main P.C. Board

FM/MW/LW TUNER (MB4R901B)

IC001 BU4066BF L.P.F. SWITCHING

IC004 TC4S66F

IC002 LC7218M PLL CONTROL

IC501 25699W23 TUNER & RDS MICOM

IC504 LC3516AML

IC506 TC4S81F

IC507 TC4S30F

IC505 μPD74HC373

IC104 NJM2904M SIGNAL METER COMPARATOR

IC301 NJM4560M

IC103 NJM2903M

IC203 TEA6300T

IC204 NJM4560M

IC101 35087W01

Q001 Q002 2SD1993 x2 HIGH SPEED L.P.F.

Q003 Q004 2SD1993 x2

Q005 FMG1 NORMAL L.P.F.

Q006 DTC114TU AM SD DETECTOR

Q007 DTC124K L.P.F. SWITCHING

Q008 DTA124EU L.P.F. REGULATOR

Q011 DTC124 EU PLL REGULATOR

Q012 FMG1

Q104 DTC124K

Q210 FMG1

Q211 FMC2 MUTE DRIVER

Q502 DTC124K OUTER MEMORY CIRCUIT

Q820 2SD601A

Q819 2SD1858

Q818 2SA1576

Q840 DTC124K

Q823 2SD2008 TUNER REGULATOR

Q824 2SB766A

Q825 2SB766A

Q826 DTC124K

Q010 FMC2

RDS DECODER REGULATOR

RDS DECODER & ERROR CORRECTION

1/2 Vcc BUFFER

ELECTRICAL VOLUME & TONE CONTROL

AUDIO ZERO CROSS

FADER MUTE

I²C BUS LOGIC

POWER SUPPLY

TP5

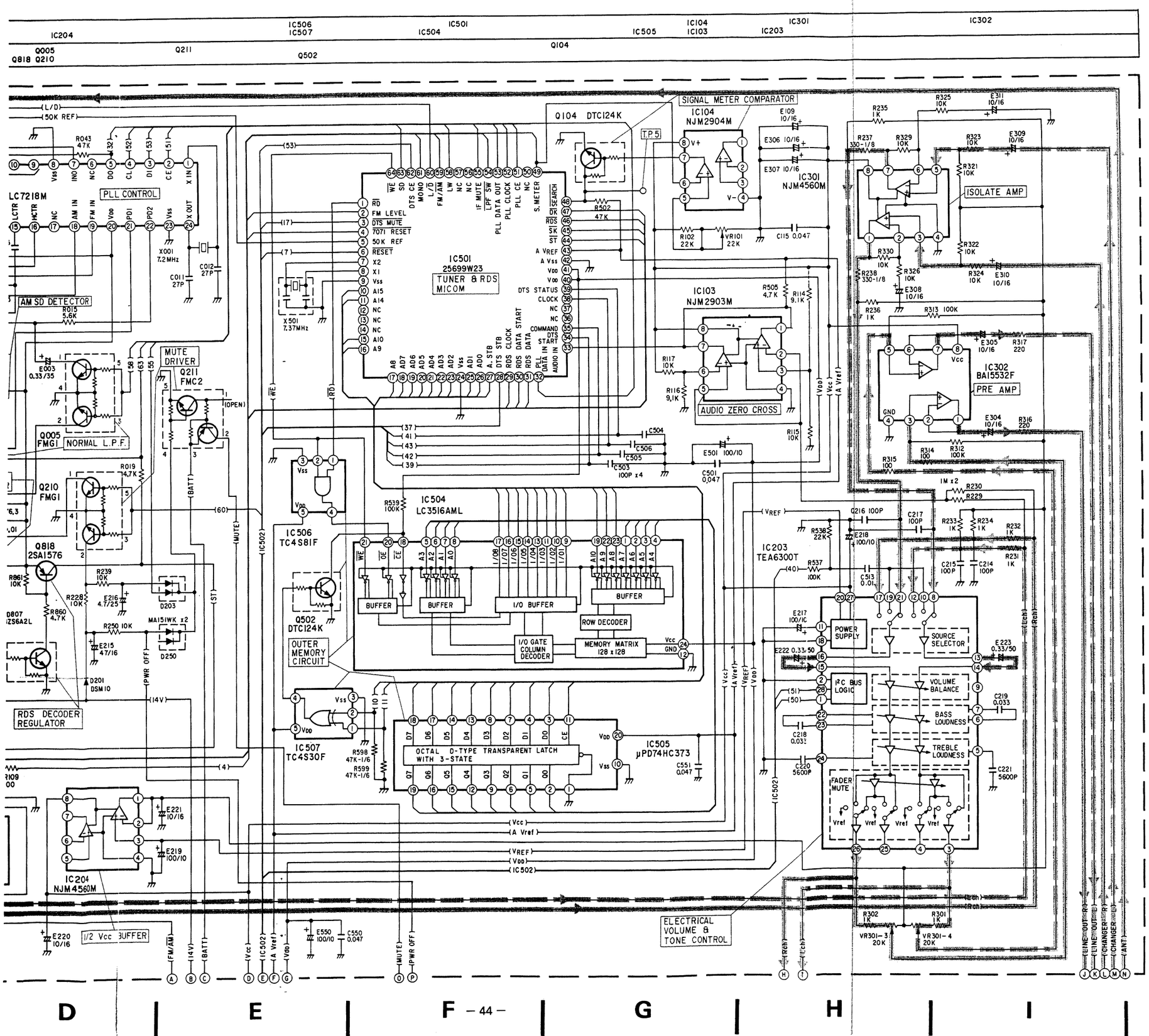
X001 7.2MHz

X501 7.37MHz

X101 19KHz

To MPX & Dolby P.C. Board (CH201)

To Soft Mute P.C. Board (CB3001)



IC001

1	0V	
2	0V	
3	0V	
4	0V	
5	0V	
6	0V/8.9V	POWER ON/OFF
7	0V	
8	3.3V	
9	3.3V	
10	3.3V	
11	3.3V	
12	8.9V	
13	0V	
14	8.9V	

IC002

1	PULSE	13	0V
2	0V	14	0V
3	0V	15	0V
4	0V	16	0V
5	4.9V	17	0V
6	0V	18	0V
7	4.9V	19	0V
8	0V	20	4.9V
9	0V	21	1.2V
10	0V	22	1.2V
11	0V	23	0V
12	0V	24	PULSE

IC004

1	7.9V	
2	8.9V	
3	3.3V/4.2V	FM/AM
4	3.3V/4.2V	FM/AM
5	0V	

IC103

1	4.9V
2	2.2V
3	4.46V
4	0V
5	2.2V
6	4.17V
7	0V
8	8.6V

IC104

1	0V
2	0.3V
3	4.3V
4	0V
5	3.6V
6	4.7V
7	0V
8	8.6V

IC203

1	4.8V	15	4.3V
2	0V	16	4.3V
3	4.3V	17	4.3V
4	4.3V	18	0V
5	4.2V	19	4.3V
6	4.3V	20	4.3V
7	4.3V	21	4.3V
8	4.3V	22	4.3V
9	8V	23	4.3V
10	4.3V	24	4.2V
11	8.6V	25	4.3V
12	4.3V	26	4.3V
13	4.3V	27	8.6V
14	4.3V	28	4.8V

IC204

1	4.3V
2	4.3V
3	4.3V
4	0V
5	0.7V
6	0.6V
7	8V
8	8.6V

IC501

1	PULSE	17	PULSE	33	4.9V	49	0V/4.9V
2	0V/4.8V	18	PULSE	34	PULSE	50	0V
3	4.9V/0V	19	PULSE	35	0V/PULSE	51	0V
4	4.4V/0V	20	PULSE	36	0V	52	0V
5	0V/4.8V	21	PULSE	37	4.9V	53	0V
6	4.9V	22	PULSE	38	PULSE	54	4.9V/0V
7	PULSE	23	PULSE	39	PULSE	55	0V/4.9V
8	PULSE	24	PULSE	40	4V	56	4.9V
9	0V	25	PULSE	41	5V	57	0V/4.9V
10	PULSE	26	PULSE	42	0V	58	0V/4.9V
11	PULSE	27	PULSE	43	5V	59	4.9V/0V
12	4.8V	28	0V	44	4.8V	60	0V/4.9V
13	4.8V	29	PULSE	45	4.8V	61	0V/4.9V
14	4.8V	30	PULSE	46	4.8V	62	0V/4.9V
15	PULSE	31	PULSE	47	4.8V	63	0V/4.9V
16	PULSE	32	4.9V	48	4.9V	64	PULSE

IC504

1	PULSE	13	PULSE
2	PULSE	14	PULSE
3	PULSE	15	PULSE
4	PULSE	16	PULSE
5	PULSE	17	PULSE
6	PULSE	18	PULSE
7	PULSE	19	PULSE
8	PULSE	20	PULSE
9	PULSE	21	PULSE
10	PULSE	22	PULSE
11	PULSE	23	PULSE
12	0V	24	5V

IC505

1	0V	11	PULSE
2	PULSE	12	PULSE
3	PULSE	13	PULSE
4	PULSE	14	PULSE
5	PULSE	15	PULSE
6	PULSE	16	PULSE
7	PULSE	17	PULSE
8	PULSE	18	PULSE
9	PULSE	19	PULSE
10	0V	20	5V

IC506

1	PULSE
2	4.9V
3	PULSE
4	PULSE
5	0V

IC507

1	PULSE
2	4.9V
3	PULSE
4	PULSE
5	0V

	E	C	B
Q001	0.6V	3.3V	1.1V
Q002	0V	3.3V	0.6V
Q003	0V	3.3V	0.6V
Q004	0.6V	8.9V	1.2V
Q006	0V	4.9V/0V	0V/0.8V
Q007	0V	0V	8.9V
Q008	4.9V	0V/4.9V	4.9V
Q011	0V	0V	6.6V/0V
Q104	0V	4.9V	0V
Q502	0V	PULSE	PULSE
Q818	4.9V	4.8V	4.2V
Q819	4.9V	13.7V	5.5V
Q820	8.9V	13.7V	9.6V
Q823	9V	13.7V	9.6V
Q824	9V	8.9V	8.3V
Q825	9V	8.9V	8.3V
Q826	0V	0V/9V	4.8V
Q840	0V	0V	8.9V

	1	2	3	4	5
Q005	0V	6.8V/0V	0V/4.8V	0V	0V/4.8V
Q010	0V	0V	4.8V	8.9V	8.9V
Q012	7.8V/0V	0V/8.3V	2.8V/0V	0V	0V/4.8V
Q210	0V	4.8V	0V	4.8V	0V
Q211	13.8V	0V	0V	13.9V	0V

IC301

1	4.3V
2	4.3V
3	4.3V
4	0V
5	4.3V
6	4.3V
7	4.3V
8	8.6V

IC302

1	4.3V
2	4.3V
3	4.3V
4	0V
5	4.3V
6	4.3V
7	4.3V
8	8.6V

IC101

1	4.8V/0.7V
2	4.8V/0.7V
3	4.8V/0.7V
4	0V
5	PS
6	PS
7	PS
8	4.7V
9	4.7V/0V
10	4.4V
11	PS
12	4.8V
13	0V
14	2.5V
15	8.8V

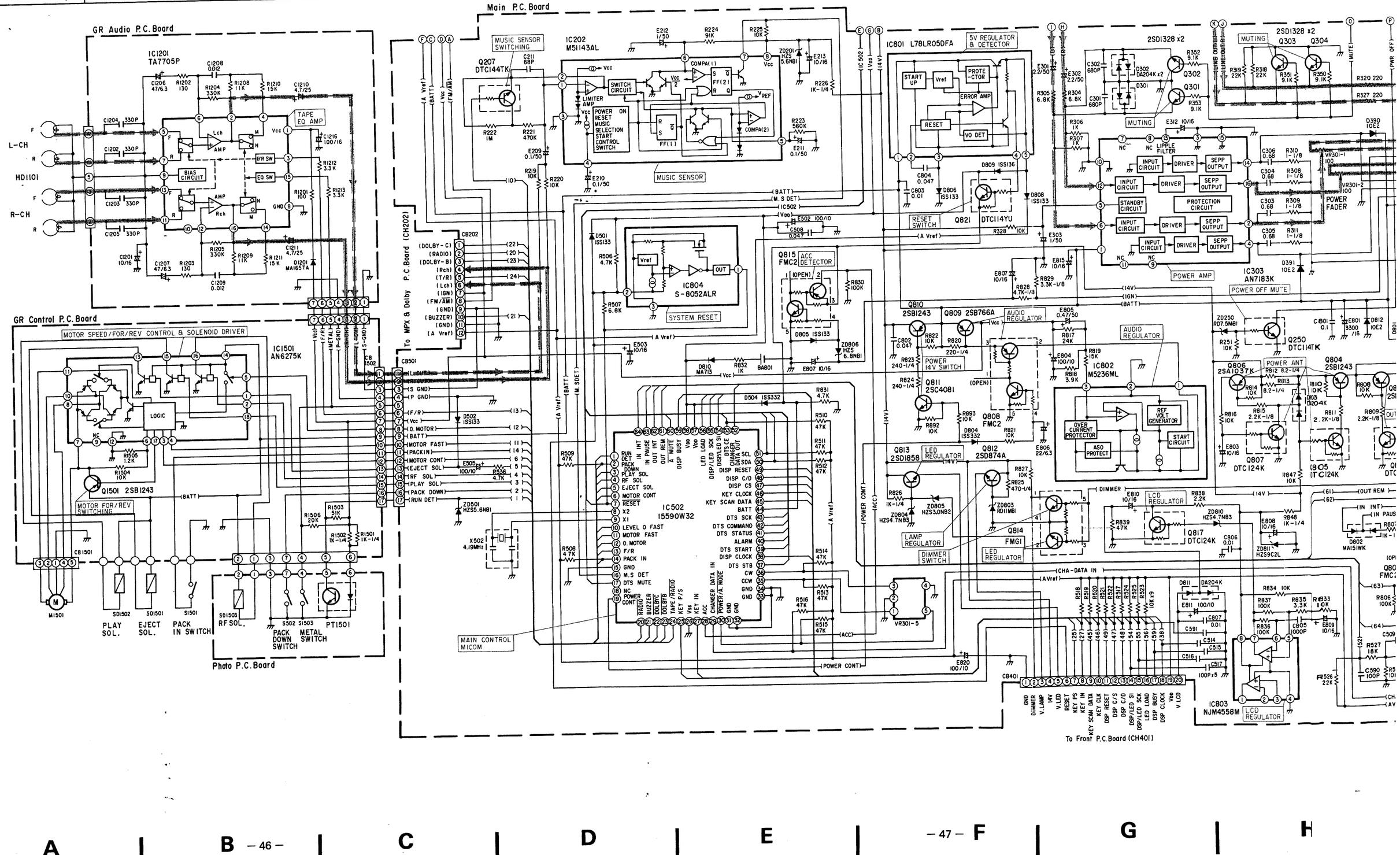
[Measuring Conditions]
- Power Supply Voltage : DC14V
- Measuring Meter : Digital Multi Voltmeter
- Measuring Point Reference : Between Ground
- Measuring Conditions :
  TAPE : No Bias Tape
  FM : 98.1MHz (No Signal Input)
  MW : 999kHz (No Signal Input)
  LW : 216kHz (No Signal Input)

NOTES:
1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

7294R 7294R

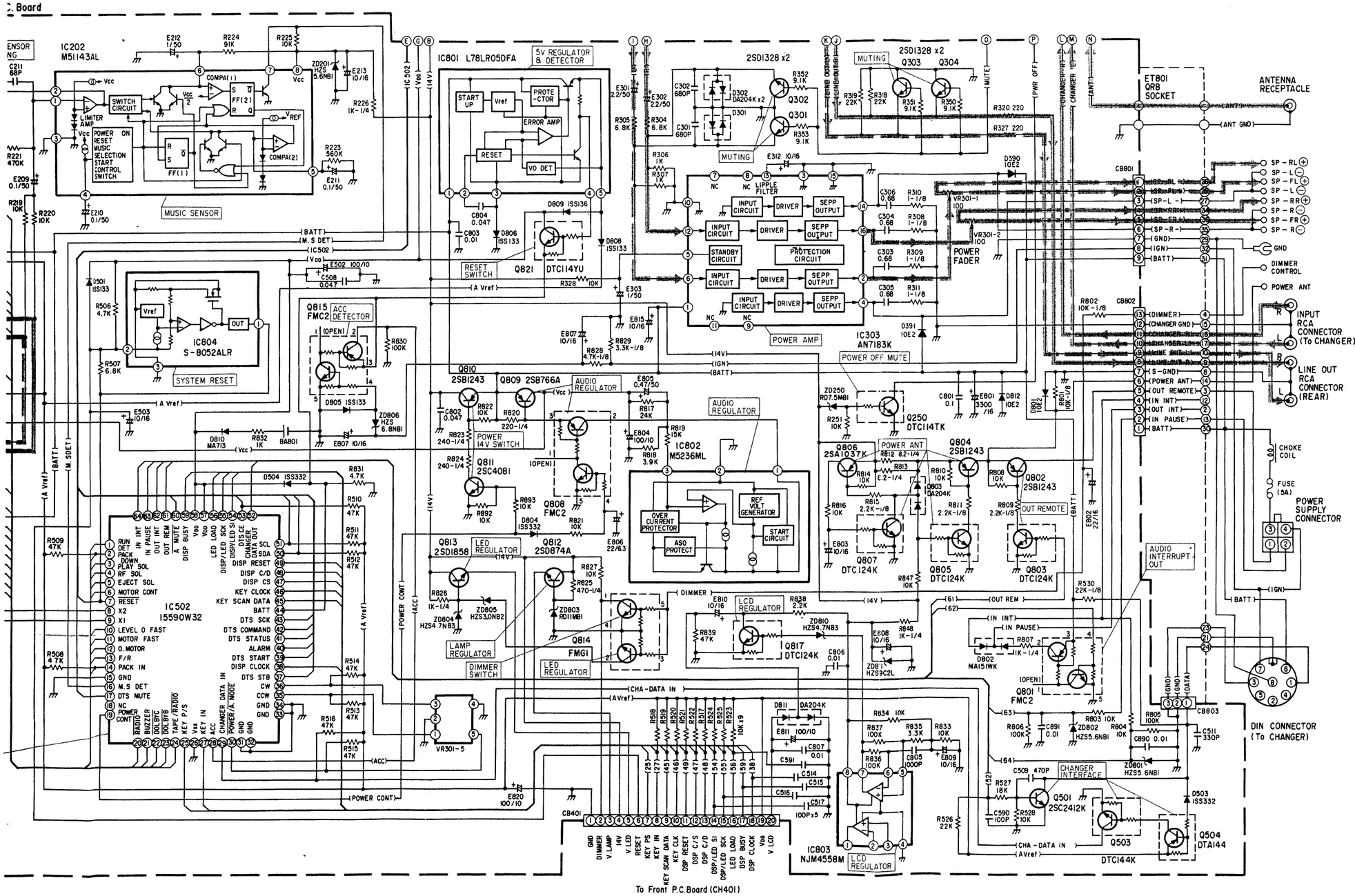
Schematic Diagram (2/3)

IC	IC1201	IC501	IC202	IC804	IC801	IC802	IC803	IC303
Transistor(Q,PT)	Q1501 PT1501	Q207	IC502 Q815	Q810 Q809 Q808 Q813 Q811 Q821 Q812 Q814		Q302 Q301 Q817	Q806 Q807	Q250 Q303 Q804 Q802 Q805 Q304 Q803



IC202 IC804 IC801 IC303
IC502 IC802 IC803
Q815 Q810 Q809 Q808 Q302 Q301 Q806 Q807 Q250 Q303 Q804 Q802
Q813 Q811 Q821 Q812 Q814 Q817 Q805 Q304 Q803 Q801 Q501 Q503 Q504

C. Board



	F	C	R
Q207	1.4V	1.4V	0V/4.8V
Q250	0V	0V	6.6V
Q301	0V	0V	0V
Q302	0V	0V	0V
Q303	0V	0V	0V
Q304	0V	0V	0V
Q501	0V	13.8V	0V
Q503	0V	4.9V	0V
Q504	4.9V	0V	4.9V
Q802	13.5V	13.5V	12.9V
Q803	0V	0V	4.8V
Q804	13.5V	13.5V	12.9V
Q805	0V	0V	9.1V
Q806	0V	0V	4.8V
Q807	13.5V	13.5V	12.9V
Q809	13.8V	8.6V	13.3V
Q810	13.8V	13.7V	13V
Q811	0V	0.1V	0.7V
Q812	10.2V	13.6V	10.8V
Q813	4.6V	13.6V	4.9V
Q817	0V	3.2V	1.8V
Q821	4.6V	4.9V	5.4V
Q1501	14V	13.9V	13.2V

	1	2	3	4	5
Q601	13.8V	0V	0V	13.9V	0V
Q808	0V	0V	3.2V	13.3V	13.2V
Q814	0.7V	4V	0V	0V	0V
Q815	0V	0V	0.5V	4.6V	4.6V

IC202

1	1.5V
2	1.5V
3	0V
4	1.4V
5	0V
6	5.3V
7	5.3V
8	5.3V

IC303

1	14V
2	6.8V
3	0V
4	6.9V
5	7.4V
6	0V
7	0V
8	0.5V
9	0V
10	0V
11	0V
12	0V
13	13.9V
14	8.9V
15	0V
16	6.8V

IC801

1	14V
2	6.3V
3	0.6V
4	5.4V
5	5.6V

IC802

1	13.4V
2	0V
3	1.2V

IC803

1	7.8V
2	0.3V
3	0.4V
4	0V
5	11.3V
6	4.3V
7	4.3V
8	8.6V

IC804

1	4.9V
2	4.9V
3	0V

CB1502

1	0V
2	0V
3	0V
4	0V
5	13.8V
6	5.1V
7	14V
8	5.1V
9	14V
10	0V
11	5.1V
12	5.1V
13	0V
14	0V
15	5.1V
16	5.1V
17	①

IC1201

1	13.1V
2	3.1V
3	4.9V
4	3.1V
5	2.9V
6	2.9V
7	2.9V
8	0V
9	2.9V
10	
11	2.9V
12	2.9V
13	2.9V
14	3.1V
15	0.1V
16	3.1V

IC1501

1	0V	10	13.9V
2	0V	11	8.1V
3	5.1V	12	0V
4	0V	13	14V
5	5.1V	14	14V
6	0.5V	15	0.2V
7	13.9V	16	14V
8	8.2V	17	13.2V
9	NC	18	5.1V

M1501

1	0V
2	13.8V
3	7V
4	6.9V
5	13.8V

① More than 5V (only MECHA)
GND — Less than 1V

[Measuring Conditions]
- Power Supply Voltage : DC14V
- Measuring Meter : Digital Multi Voltmeter
- Measuring Point Reference : Between Ground
- Measuring Conditions :
  TAPE : No Bias Tape
  FM : 98.1MHz (No Signal Input)
  MW : 999kHz (No Signal Input)
  LW : 216kHz (No Signal Input)

IC502

1	PULSE/4.5V	17	0V/4.8V	33	0V	49	0V/4.9V
2	4.7V/0V	18	4.8V/0V	34	0V	50	PULSE/4.9V
3	4.8V/0V	19	4.8V/0V	35	PULSE/4.9V	51	PULSE/4.9V
4	4.8V/0V	20	0V/4.8V	36	PULSE/4.9V	52	PULSE
5	4.8V/0V	21	PULSE/0V	37	0V	53	4.9V/0V
6	4.8V/0V	22	0V/4.8V	38	PULSE	54	PULSE
7	4.9V	23	0V/4.6V	39	PULSE	55	PULSE
8	PULSE	24	4.8V/0V	40	PULSE/0V	56	PULSE
9	PULSE	25	PULSE	41	PULSE	57	4.9V
10	4.8V/0V	26	0V	42	0V	58	4.9V
11	4.8V/0V	27	PULSE	43	PULSE	59	PULSE
12	4.8V/0V	28	4.6V	44	4.6V	60	0V/4.9V
13	4.8V/0V	29	PULSE	45	PULSE	61	4.9V/0V
14	4.9V/0V	30	4.9V/0V	46		62	4.9V/0V
15	0V	31	0V	47	PULSE	63	4.9V/0V
16	PULSE/0V	32	0V	48	PULSE	64	4.9V/0V

NOTES:
1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. P = $\frac{1}{1{,}000{,}000}$

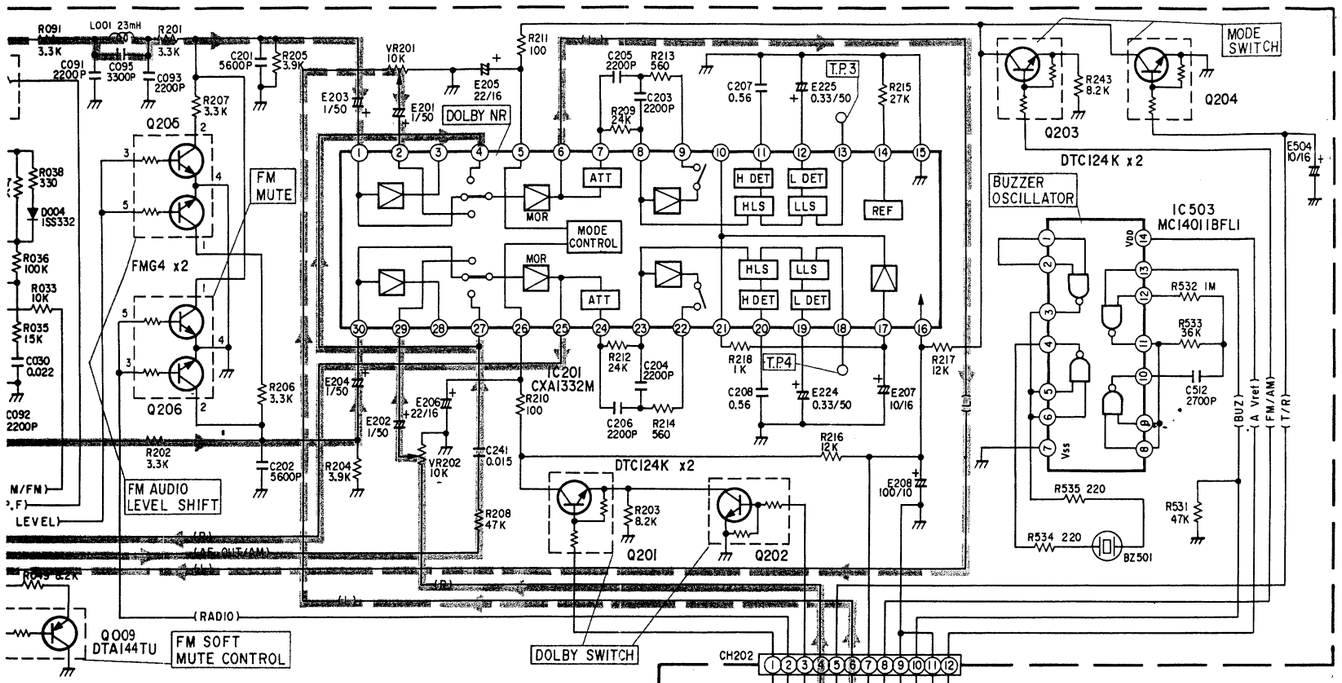
Schematic Diagram (3/3)

IC	IC003	IC005	IC401	IC201	IC403	IC503	IC402
Transistor (Q)	Q3001 Q3002	Q013 Q401 Q009 Q205 Q206		Q201 Q202	Q203	Q204	Q403

| | | |

IC401 IC201 IC503 IC403 IC402

Q401 Q009 Q205 Q206 Q201 Q202 Q203 Q204 Q403 Q402



	E	C	B
Q009	4.8V	0V	6.2V
Q013	0V	0V	8.9V
Q201	3.7V	0V/7.5V	0V/4.8V
Q202	0V	4V/0V	0V/4.8V
Q203	3.7V	4V/0V	4.8V/0V
Q204	0V	0V/7.5V	4.8V/0V
Q401	0V	0V/2.2V	0.7V/0V
Q3001	0.9V	8.5V	1.5V
Q3002	6.2V	0V	5.6V

IC003

1	2.4V	15	2.5V
2	1.8V	16	2.5V
3	1.3V	17	4.9V
4	0V	18	0V
5	2.5V	19	2.5V
6	1.3V	20	0V
7	1.2V	21	1.4V
8	1.9V	22	2.4V
9	0.1V	23	2.4V
10	4.6V	24	2.5V
11	1.9V	25	8.8V
12	2.4V	26	2.5V
13	2.4V	27	2.3V
14	0V/2.6V	28	2.5V

IC401

1	4.9V/PS
2	PS
3	4.9V/PS
4	4.9V/PS
5	4.9V/PS
6	4.9V/PS
7	4.9V/PS
8	0V
9	PS
10	PS
11	PS
12	PS
13	4.9V/PS
14	0V
15	4.9V
16	4.9V

IC402

1	PS
2	PS
3	4.9V/0V
4	4.9V/0V
5	4.9V/0V
6	4.9V/0V
7	PS
8	0V
9	0V
10	4.9V/0V
11	4.9V/0V
12	4.9V
13	4.9V
14	PS
15	4.9V
16	4.9V

IC005

1	4.5V
2	2.4V
3	2.3V
4	0V
5	5.6V
6	5.6V
7	5.6V
8	8.8V

IC503

1	0V
2	0V
3	5V
4	0V
5	5V
6	5V
7	0V
8	5V
9	5V
10	0V
11	5V
12	4.5V
13	0V
14	5V

IC201

1	4.3V		16	8.6V	
2	4.3V		17	4.3V	
3	4.3V		18	4.3V	
4	4.3V		19	0.4V	
5	0V/4V/7.5V	TAPE/FM/AM	20	0.4V	
6	4.3V		21	4.3V	
7	4.3V		22	4.3V	
8	4.3V		23	4.3V	
9	4.3V		24	4.3V	
10	4.3V		25	4.3V	
11	0.4V		26	0V/4V/7.5V	DOLBY OFF/B/C
12	0.4V		27	4.3V	
13	4.3V		28	4.3V	
14	1.3V		29	4.3V	
15	0V		30	4.3V	

	1	2	3	4	5
Q205	0V	0V	0V/4.8V	0V	0V/4.8V
Q206	1.2V	1.2V	0V/4.8V	0V	0V/4.8V
Q402	0V/4.1V	0V/4.1V	4.9V/0V	4.2V	4.9V/0V
Q403	0V/4.1V	0V/4.1V	4.9V/0V	4.2V	4.9V/0V

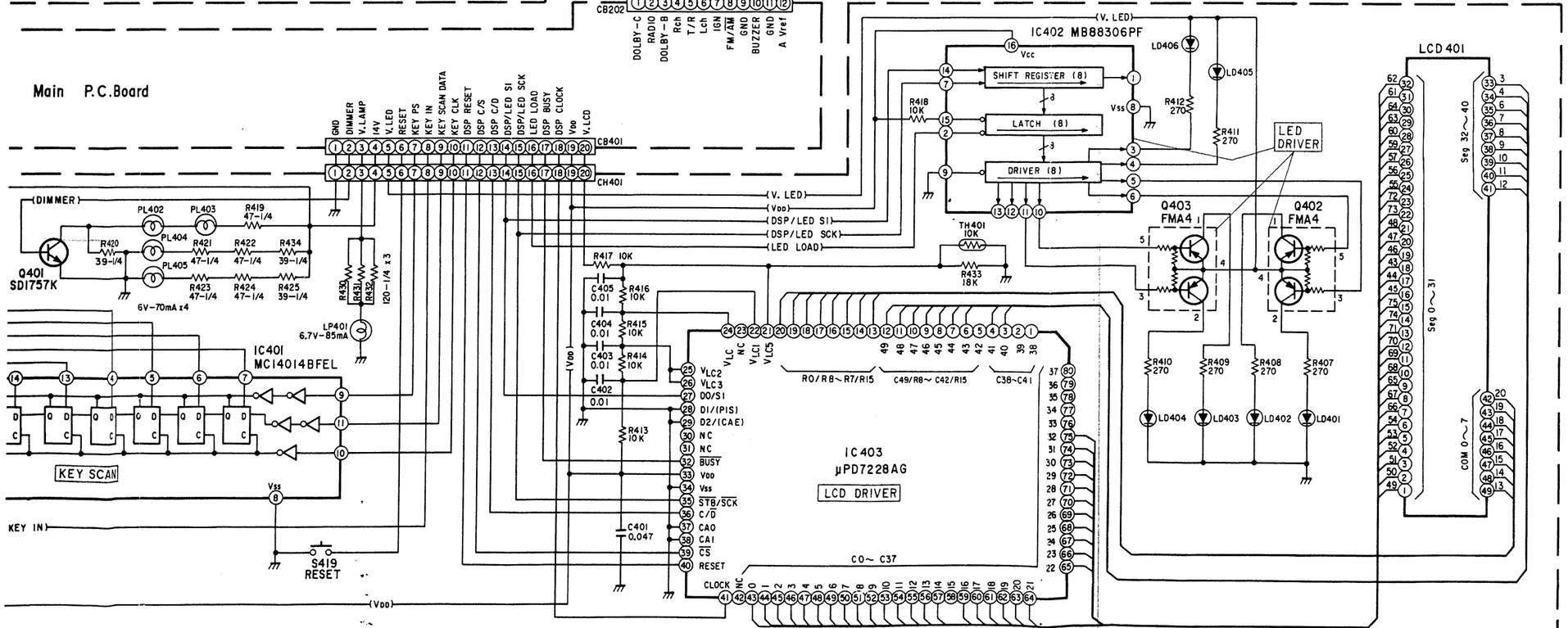
IC403

1	PS	21	-0.9V	41	PS	61	PS
2	PS	22	3.4V	42	PS	62	PS
3	PS	23	—	43	PS	63	PS
4	PS	24	1V	44	PS	64	PS
5	PS	25	2V	45	PS	65	PS
6	PS	26	2V	46	PS	66	PS
7	PS	27	PS	47	PS	67	PS
8	PS	28	0V	48	PS	68	PS
9	PS	29	0V	49	PS	69	PS
10	PS	30	4.9V	50	PS	70	PS
11	PS	31	4.9V	51	PS	71	PS
12	PS	32	PS	52	PS	72	PS
13	PS	33	4.9V	53	PS	73	PS
14	PS	34	0V	54	PS	74	PS
15	PS	35	PS	55	PS	75	PS
16	PS	36	PS	56	PS	76	—
17	PS	37	0V	57	PS	77	—
18	PS	38	0V	58	PS	78	—
19	PS	39	PS	59	PS	79	—
20	PS	40	PS	60	PS	80	—

[Measuring Conditions]
- Power Supply Voltage : DC14V
- Measuring Meter : Digital Multi Voltmeter
- Measuring Point Reference : Between Ground

- Measuring Conditions :
  TAPE : No Bias Tape
  FM : 98.1MHz (No Signal Input)
  MW : 999kHz (No Signal Input)
  LW : 216kHz (No Signal Input)

Main P.C.Board



NOTES:
1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1{,}000{,}000}$

Electrical Parts List

Resistor : Carbon resistors under 1/4 watts are not mentioned in the parts list, please confirm them by schematic diagram.

Capacitor : μF = microfarads, pF = picofarads

Abbreviations

RES. =	Resistor	CAP. =	Capacitor
C.F. =	Carbon Film	ELY. =	Electrolytic
M.F. =	Metal Film	CER. =	Ceramic
M.O. =	Metal Oxide Film	MYL. =	Mylar
M.P. =	Metal Plate	TAN. =	Tantalum
TR. =	Transistor	POLY. =	Polystyrol
TRANS. =	Transformer	PP. =	Polypropylene
CP. =	Chip	PLT. =	Polyethylene
		PF. =	Polyester Film

Symbol No.	Part No.	Description
Main P. C. Board		
IC's		
IC001	51T68999F03	BU4066BF
IC002	51T15853W02	LC7218M
IC004	51T93532F07	TC4S66F
IC101	51T35087W01	35087W01
IC103	51T93332F01	NJM2903M
IC104	51T93333F01	NJM2904M
IC202	51T67915F01	M51143AL
IC203	51T83607F04	TEA6300T
IC204	51T93337F01	NJM4560M
IC301	51T93337F01	NJM4560M
IC302	51T25154W01	BA15532F
IC303	51T25765W12	AN7183K
IC501	51T25699W23	25699W23
IC502	51T15590W32	15590W32
IC504	51T84723F02	LC3516AML
or	51T90640F01	CXK5816M
IC505	51T35086W02	μPD74HC373
IC506	51T93532F04	TC4S81F
IC507	51T93532F08	TC4S30F
IC801	51T15268W03	L78LR05DFA
IC802	51T90890F01	M5236ML
IC803	51T93336F01	NJM4558M
IC804	51T95014F05	S-8052ALR
Transistors		
Q001	48T90181F05	2SD1993
Q002	48T90181F05	2SD1993
Q003	48T90181F05	2SD1993
Q004	48T90181F05	2SD1993
Q005	48T73888F08	CP., FMG1
Q006	48T94606F05	CP., DTC114TU
Q007	48T62967F03	CP., DTC124K
Q008	48T94606F53	CP., DTA124EU
Q010	48T73888F12	CP., FMC2
Q011	48T94606F03	CP., DTC124EU
Q012	48T73888F08	CP., FMG1
Q104	48T62967F03	CP., DTC124K
Q207	48T62967F22	CP., DTC144TK
Q210	48T73888F08	CP., FMG1
Q211	48T73888F12	CP., FMC2
Q250	48T62967F10	CP., DTC114TK
Q301	48T63788F02	CP., 2SD1328
Q302	48T63788F02	CP., 2SD1328
Q303	48T63788F02	CP., 2SD1328
Q304	48T63788F02	CP., 2SD1328
Q501	48T63417F01	CP., 2SC2412K
Q502	48T62967F03	CP., DTC124K
Q503	48T62967F04	CP., DTC144K
Q504	48T62966F04	CP., DTA144
Q801	48T73888F12	CP., FMC2
Q802	48T84366F01	2SB1243
Q803	48T62967F03	CP., DTC124K
Q804	48T84366F01	2SB1243
Q805	48T62967F03	CP., DTC124K
Q806	48T63420F03	CP., 2SA1037K
Q807	48T62967F03	CP., DTC124K
Q808	48T73888F12	CP., FMC2
Q809	48T73022F01	CP., 2SB766A
Q810	48T84366F01	2SB1243
Q811	48T94582F01	CP., 2SC4081
Q812	48T73023F01	2SD874A
Q813	48T83415F03	2SD1858
Q814	48T73888F08	CP., FMG1
Q815	48T73888F12	CP., FMC2
Q817	48T62967F03	CP., DTC124K
Q818	48T94581F01	CP., 2SA1576
Q819	48T83415F03	2SD1858
Q820	48T52438F03	CP., 2SD601A
Q821	48T94606F02	CP., DTC114YU
Q823	48T15289W01	2SD2008
Q824	48T73022F01	CP., 2SB766A
Q825	48T73022F01	CP., 2SB766A
Q826	48T62967F03	CP., DTC124K
Q840	48T62967F03	CP., DTC124K
Diodes		
D002	48T94608F03	CP., DAN202U
D101	48T16617W01	CP., 1SS332
D201	48T15512W01	CP., DSM10
D203	48T52446F01	CP., MA151WK
D250	48T52446F01	CP., MA151WK

Symbol No.	Part No.	Description
D301	48T64134F01	CP., DA204K
D302	48T64134F01	CP., DA204K
D390	48C40235G02	10E2
D391	48C40235G02	10E2
D501	48T68828F01	1SS133
D502	48T68828F01	1SS133
D503	48T16617W01	CP., 1SS332
D504	48T16617W01	CP., 1SS332
D801	48C40235G02	10E2
D802	48T52446F01	CP., MA151WK
D803	48T64134F01	CP., DA204K
D804	48T16617W01	CP., 1SS332
D805	48T68828F01	1SS133
D806	48T68828F01	1SS133
D808	48T68828F01	1SS133
D809	48T70933F01	1SS136
D810	48T95117F01	CP., MA713
D811	48T64134F01	CP., DA204K
D812	48C40235G02	10E2
ZD001	48T90517F24	Zener, HZS5.1NB2
ZD201	48T90517F26	Zener, HZS5.6NB1
ZD250	48T62934F30	Zener, CP. RD7.5MB1
ZD501	48T90517F26	Zener, HZS5.6NB1
ZD801	48T90517F26	Zener, HZS5.6NB1
ZD802	48T90517F26	Zener, HZS5.6NB1
ZD803	48T62934F42	Zener, CP. RD11MB1
ZD804	48T90517F22	Zener, HZS4.7NB3
ZD805	48T90517F10	Zener, HZS3.0NB2
ZD806	48T90517F32	Zener, HZS6.8NB1
ZD807	48T83128F02	Zener, HZS6A2L
ZD808	48T83128F26	Zener, HZS9C2L
ZD809	48T83128F26	Zener, HZS9C2L
ZD810	48T90517F22	Zener, HZS4.7NB3
ZD811	48T83128F26	Zener, HZS9C2L

Crystals

X001	91T25773W43	7.2MHz
X101	91T68469F04	CER. Lock, 19kHz
X501	91T15285W04	CER. Lock, 7.37MHz
X502	91T15285W01	CER. Lock, 4.19MHz

Symbol No.	Part No.	Description
Capacitors		
C001	08S65128F69	CP., 0.01μF
E001	23S61523F09	ELY., 22μF/10V
C003	08T15399W03	CP., 0.047μF
E003	23T74437F46	TAN., 0.33μF/35V
C004	08T90316F29	TF, 0.1μF
E004	23S61524F05	ELY., 22μF/6.3V
C005	08S65128F61	CP., 2200pF
C006	08T90316F17	TF, 0.01μF
E006	23S61523F29	ELY., 1μF/50V
C007	08S65128F69	CP., 0.01μF
C008	08T15399W02	CP., 0.033μF
C009	08T15399W02	CP., 0.033μF
C010	08T15399W02	CP., 0.033μF
C011	08S65128F21	CP., 27pF
C012	08S65128F21	CP., 27pF
C013	08S65128F69	CP., 0.01μF
C015	08T15399W03	CP., 0.047μF
C017	08S65128F78	CP., 0.022μF
C033	23T82372F19	ELY., 2.2μF/50V
C035	08S65128F69	CP., 0.01μF
E101	23S61523F05	ELY., 22μF/6.3V
E104	23S61523F05	ELY., 22μF/6.3V
E109	23S61523F12	ELY., 10μF/16V
C115	08T15399W03	CP., 0.047μF
E209	23S61523F25	ELY., 0.1μF/50V
E210	23S61523F25	ELY., 0.1μF/50V
C211	08S65128F31	CP., 68pF
E211	23S61523F25	ELY., 0.1μF/50V
E212	23S61524F32	ELY., 1μF/50V
E213	23S61523F12	ELY., 10μF/16V
C214	08S82122F37	CP., 100pF
C215	08S82122F37	CP., 100pF
E215	23S61524F16	ELY., 47μF/16V
C216	08S82122F37	CP., 100pF
E216	23S61524F18	ELY., 4.7μF/25V
C217	08S82122F37	CP., 100pF
E217	23T25149W13	ELY., 100μF/10V
C218	08T90316F23	TF, 0.033μF
E218	23T25149W13	ELY., 100μF/10V
C219	08T90316F23	TF, 0.033μF
E219	23T25149W13	ELY., 100μF/10V
C220	08T90316F14	TF, 5600pF
E220	23T25149W09	ELY., 10μF/16V
C221	08T90316F14	TF, 5600pF
E221	23T25149W09	ELY., 10μF/16V
E222	23T25149W03	ELY., 0.33μF/50V
E223	23T25149W03	ELY., 0.33μF/50V
C301	08S82122F57	CP., 680pF
E301	23T25149W06	ELY., 2.2μF/50V
C302	08S82122F57	CP., 680pF

Symbol No.	Part No.	Description
E302	23T25149W06	ELY., 2.2μF/50V
C303	08T90316F39	TF, 0.68μF
E303	23T25057W14	ELY., 1μF/50V
C304	08T90316F39	TF, 0.68μF
E304	23T25149W09	ELY., 10μF/16V
C305	08T90316F39	TF, 0.68μF
E305	23T25149W09	ELY., 10μF/16V
C306	08T90316F39	TF, 0.68μF
E306	23T25149W09	ELY., 10μF/16V
E307	23T25149W09	ELY., 10μF/16V
E308	23T25149W09	ELY., 10μF/16V
E309	23T25149W09	ELY., 10μF/16V
E310	23T25149W09	ELY., 10μF/16V
E311	23T25149W09	ELY., 10μF/16V
E312	23T25057W05	ELY., 10μF/16V
C501	08T15399W03	CP., 0.047μF
E501	23S61523F34	ELY., 100μF/10V
E502	23S61523F34	ELY., 100μF/10V
C503	08S65128F35	CP., 100pF
E503	23S41059P26	TAN., 10μF/16V
C504	08S65128F35	CP., 100pF
C505	08S65128F35	CP., 100pF
E505	23S61523F34	ELY., 100μF/10V
C506	08S65128F35	CP., 100pF
C508	08T15399W03	CP., 0.047μF
C509	08S65128F51	CP., 470pF
C511	08S65128F47	CP., 330pF
C513	08S65128F69	CP., 0.01μF
C514	08S65128F35	CP., 100pF
C515	08S65128F35	CP., 100pF
C516	08S65128F35	CP., 100pF
C517	08S65128F35	CP., 100pF
C550	08T15399W03	CP., 0.047μF
E550	23S61523F34	ELY., 100μF/10V
C551	08T15399W03	CP., 0.047μF
C590	08S65128F35	CP., 100pF
C591	08S65128F35	CP., 100pF
C801	08S65128F76	CP., 0.1μF
E801	23T16360W41	ELY., 3300μF/16V
C802	08T15399W03	CP., 0.047μF
E802	23S61524F14	ELY., 22μF/16V
C803	08S65128F69	CP., 0.01μF
E803	23S61523F12	ELY., 10μF/16V
C804	08T15399W03	CP., 0.047μF
E804	23T25149W13	ELY., 100μF/10V
C805	08S65128F57	CP., 1000pF
E805	23T25149W04	ELY., 0.47μF/50V
C806	08S65128F69	CP., 0.01μF
E806	23S61524F05	ELY., 22μF/6.3V
C807	08S65128F69	CP., 0.01μF
E807	23S61523F12	ELY., 10μF/16V
E808	23S61523F12	ELY., 10μF/16V

Symbol No.	Part No.	Description
E809	23S61523F12	ELY., 10μF/16V
C810	08S65128F78	CP., 0.022μF
E810	23S61523F12	ELY., 10μF/16V
E811	23S61523F34	ELY., 100μF/10V
C812	08S65128F78	CP., 0.022μF
E812	23S61523F12	ELY., 10μF/16V
E813	23S61523F34	ELY., 100μF/10V
E814	23T73862F02	ELY., 220μF/10V
E815	23T25149W09	ELY., 10μF/16V
E820	23S61523F34	ELY., 100μF/10V
C890	08S65128F69	CP., 0.01μF
C891	08S65128F69	CP., 0.01μF

Resistors (All resistors are chip 1/10W ± 5% unless otherwise noted.)

R001	06S64995F53	1K ohm
R002	06S64995F53	1K ohm
R003	06S64995F77	10K ohm
R004	06S64995F71	5.6K ohm
R005	06S64995F47	560 ohm
R006	06S64995F85	22K ohm
R007	06S64995F53	1K ohm
R008	06S64995F37	220 ohm
R009	06S64995F53	1K ohm
R010	06S64995F65	3.3K ohm
R011	06S64995F65	3.3K ohm
R012	06S64995F53	1K ohm
R013	06S64995F05	10 ohm
R014	06S64995F75	8.2K ohm
R015	06S64995F71	5.6K ohm
R016	06S64995F85	22K ohm
R017	06S64995F53	1K ohm
R018	06S64996F02	100K ohm
R019	06S64995F69	4.7K ohm
R020	06S64996F26	1M ohm
R025	06S64995F77	10K ohm
R043	06S64995F93	47K ohm
R050	06S64995F93	47K ohm
R082	06S64996F02	100K ohm
R083	06S64995F77	10K ohm
R084	06S64995F53	1K ohm
R085	06S64995F77	10K ohm
R086	06S64995F93	47K ohm
R102	06S64995F85	22K ohm
R104	06S64995F77	10K ohm
R105	06S64995F77	10K ohm
R106	06S64995F77	10K ohm
R109	06S64995F29	100 ohm
R114	06S64995F76	9.1K ohm
R115	06S64995F77	10K ohm

Symbol No.	Part No.	Description
R116	06S64995F76	9.1K ohm
R117	06S64995F77	10K ohm
R219	06S64995F77	10K ohm
R220	06S64995F77	10K ohm
R221	06S64996F18	470K ohm
R222	06S64996F26	1M ohm
R223	06S64996F20	560K ohm
R224	06S64996F01	91K ohm
R225	06S64995F77	10K ohm
R226	06T70072F53	1K ohm 1/4W
R228	06S64995F77	10K ohm
R229	06S64996F26	1M ohm
R230	06S64996F26	1M ohm
R231	06S64995F53	1K ohm
R232	06S64995F53	1K ohm
R233	06S64995F53	1K ohm
R234	06S64995F53	1K ohm
R235	06S64995F53	1K ohm
R236	06S64995F53	1K ohm
R237	06S53330F41	330 ohm 1/8W
R238	06S53330F41	330 ohm 1/8W
R239	06S64995F77	10K ohm
R250	06S64995F77	10K ohm
R251	06S64995F77	10K ohm
R301	06S64995F53	1K ohm
R302	06S64995F53	1K ohm
R304	06S64995F73	6.8K ohm
R305	06S64995F73	6.8K ohm
R306	06S64995F53	1K ohm
R307	06S64995F53	1K ohm
R308	06S53331F41	1 ohm 1/8W
R309	06S53331F41	1 ohm 1/8W
R310	06S53331F41	1 ohm 1/8W
R311	06S53331F41	1 ohm 1/8W
R312	06S64996F02	100K ohm
R313	06S64996F02	100K ohm
R314	06S64995F29	100 ohm
R315	06S64995F29	100 ohm
R316	06S64995F37	220 ohm
R317	06S64995F37	220 ohm
R318	06S64995F85	22K ohm
R319	06S64995F85	22K ohm
R320	06S64995F37	220 ohm
R321	06S64995F77	10K ohm
R322	06S64995F77	10K ohm
R323	06S64995F77	10K ohm
R324	06S64995F77	10K ohm
R325	06S64995F77	10K ohm
R326	06S64995F77	10K ohm
R327	06S64995F37	220 ohm
R328	06S64995F77	10K ohm
R329	06S64995F77	10K ohm

Symbol No.	Part No.	Description
R330	06S64995F77	10K ohm
R350	06S64995F76	9.1K ohm
R351	06S64995F76	9.1K ohm
R352	06S64995F76	9.1K ohm
R353	06S64995F76	9.1K ohm
R502	06S64995F93	47K ohm
R505	06S64995F69	4.7K ohm
R506	06S64995F69	4.7K ohm
R507	06S64995F73	6.8K ohm
R508	06S64995F93	47K ohm
R509	06S64995F93	47K ohm
R510	06S64995F93	47K ohm
R511	06S64995F93	47K ohm
R512	06S64995F93	47K ohm
R513	06S64995F93	47K ohm
R514	06S64995F93	47K ohm
R515	06S64995F93	47K ohm
R516	06S64995F93	47K ohm
R517	06S64995F77	10K ohm
R518	06S64995F77	10K ohm
R519	06S64995F77	10K ohm
R520	06S64995F77	10K ohm
R521	06S64995F77	10K ohm
R522	06S64995F77	10K ohm
R523	06S64995F77	10K ohm
R524	06S64995F77	10K ohm
R525	06S64995F77	10K ohm
R526	06S64995F85	22K ohm
R527	06S64995F83	18K ohm
R528	06S64995F77	10K ohm
R530	06S53330F85	22K ohm 1/8W
R536	06S64995F69	4.7K ohm
R537	06S64996F02	100K ohm
R538	06S64995F85	22K ohm
R539	06S64996F02	100K ohm
R801	06S53330F77	10K ohm 1/8W
R802	06S53330F77	10K ohm 1/8W
R803	06S64995F77	10K ohm
R804	06S64995F77	10K ohm
R805	06S64996F02	100K ohm
R806	06S64996F02	100K ohm
R807	06T70072F53	1K ohm 1/4W
R808	06S64995F77	10K ohm
R809	06S53330F61	2.2K ohm 1/8W
R810	06S64995F77	10K ohm
R811	06S53330F61	2.2K ohm 1/8W
R812	06T70072F04	8.2 ohm 1/4W
R813	06T70072F04	8.2 ohm 1/4W
R814	06S64995F77	10K ohm
R815	06S53330F61	2.2K ohm 1/8W
R816	06S64995F77	10K ohm
R817	06S64995F86	24K ohm

Symbol No.	Part No.	Description
R818	06S64995F67	3.9K ohm
R819	06S64995F81	15K ohm
R820	06T70072F37	220 ohm 1/4W
R821	06S64995F77	10K ohm
R822	06S64995F77	10K ohm
R823	06T70072F38	240 ohm 1/4W
R824	06T70072F38	240 ohm 1/4W
R825	06T70072F45	470 ohm 1/4W
R826	06T70072F53	1K ohm 1/4W
R827	06S64995F77	10K ohm
R828	06S53330F69	4.7K ohm 1/8W
R829	06S53330F65	3.3K ohm 1/8W
R830	06S64996F02	100K ohm
R831	06S64995F69	4.7K ohm
R832	06S64995F53	1K ohm
R833	06S64995F77	10K ohm
R834	06S64995F77	10K ohm
R835	06S64995F65	3.3K ohm
R836	06S64996F02	100K ohm
R837	06S64996F02	100K ohm
R838	06S64995F61	2.2K ohm
R839	06S64995F93	47K ohm
R840	06T70072F53	1K ohm 1/4W
R841	06T70072F53	1K ohm 1/4W
R842	06T70072F53	1K ohm 1/4W
R843	06S64995F77	10K ohm
R844	06S53330F61	2.2K ohm 1/8W
R845	06S53330F65	3.3K ohm 1/8W
R846	06S53330F65	3.3K ohm 1/8W
R847	06S64995F77	10K ohm
R848	06T70072F53	1K ohm 1/4W
R860	06S64995F69	4.7K ohm
R861	06S64995F77	10K ohm
R870	06S64995F77	10K ohm
R892	06S64995F77	10K ohm
R893	06S64995F77	10K ohm
VR101	18T74439F15	Variable, 22K ohm
VR301	18T25907W01	Volume, Rotary Encoder (ENCODER, PRE FADER, POWER FADER, POWER)

Front P. C. Board

IC's

IC401	51T16618W02	MC14014BFEL
IC402	51T74191F03	MB88306PF
IC403	51T25797W01	μPD7228AG

Symbol No.	Part No.	Description
Transistors		
Q401	48T72752F01	CP., 2SD1757K
Q402	48T73888F07	CP., FMA4
Q403	48T73888F07	CP., FMA4
Diode		
D401	48T94471F01	CP., IMN10
LED's		
LD401	48T90476F02	CP., BR1102W (RED)
LD402	48T90476F02	CP., BR1102W (RED)
LD403	48T90476F02	CP., BR1102W (RED)
LD404	48T90476F02	CP., BR1102W (RED)
LD405	48T90476F02	CP., BR1102W (RED)
LD406	48T90476F02	CP., BR1102W (RED)
LD407	48T15700W02	MBG4868K (GRN)
LD408	48T15700W02	MBG4868K (GRN)
LD409	48T15700W02	MBG4868K (GRN)
LD410	48T15700W02	MBG4868K (GRN)
LD411	48T15700W02	MBG4868K (GRN)
LD412	48T15700W02	MBG4868K (GRN)
LD413	48T15700W02	MBG4868K (GRN)
LD414	48T15700W02	MBG4868K (GRN)
LD415	48T15700W02	MBG4868K (GRN)
LD416	48T15700W02	MBG4868K (GRN)
Switches		
S401	40T10876W12	Tact, SKHLAJ (TAPE ▶/ ‖)
S402	40T10876W12	Tact, SKHLAJ (TUNER/BAND)
S403	40T10876W12	Tact, SKHLAJ (TUNE/DISP)
S404	40T10876W12	Tact, SKHLAJ (DISC ▶/ ‖)
S405	40T10876W12	Tact, SKHLAJ (UP/FF/ ⏭)
S406	40T10876W12	Tact, SKHLAJ (DN/REW/ ⏮)
S407	40T10876W12	Tact, SKHLAJ (M3/M.S.)
S408	40T10876W12	Tact, SKHLAJ (M2/DOLBY C)
S409	40T10876W12	Tact, SKHLAJ (M1/DOLBY B)
S410	40T10876W12	Tact, SKHLAJ (M6/PROG)

Symbol No.	Part No.	Description
S411	40T10876W12	Tact, SKHLAJ (M5 / R.EJECT)
S412	40T10876W12	Tact, SKHLAJ (M4 / B.SKIP)
S413	40T10876W12	Tact, SKHLAJ (MONO / REPEAT)
S414	40T10876W12	Tact, SKHLAJ (DX / SCAN)
S415	40T10876W12	Tact, SKHLAJ (EJECT)
S416	40T10876W12	Tact, SKHLAJ (D.A.P. / M.I.X.)
S417	40T10876W12	Tact, SKHLAJ (T.INFO / LOUD)
S418	40T10876W12	Tact, SKHLAJ (A.P.I.)
S419	40T10876W12	Tact, SKHLAJ (RESET)

Lamps / Thermistor

PL401	65T25230W01	6.7V - 85mA
PL402	65T95274F02	6V - 70mA
PL403	65T25170W06	6V - 70mA
PL404	65T25170W06	6V - 70mA
PL405	65T25170W06	6V - 70mA
TH401	48T93439F03	Thermistor, 10K ohm

Capacitors

C401	08T15399W03	CP., 0.047μF
C402	08S65128F69	CP., 0.01μF
C403	08S65128F69	CP., 0.01μF
C404	08S65128F69	CP., 0.01μF
C405	08S65128F69	CP., 0.01μF

Resistors (All resistors are chip 1/10W ± 5% unless otherwise noted.)

R401	06S64995F93	47K ohm
R402	06S64995F93	47K ohm
R403	06S64995F93	47K ohm
R404	06S64995F93	47K ohm
R405	06S64995F93	47K ohm
R406	06S64995F93	47K ohm
R407	06S64995F39	270 ohm
R408	06S64995F39	270 ohm
R409	06S64995F39	270 ohm
R410	06S64995F39	270 ohm
R411	06S64995F39	270 ohm
R412	06S64995F39	270 ohm
R413	06S64995F77	10K ohm
R414	06S64995F77	10K ohm
R415	06S64995F77	10K ohm
R416	06S64995F77	10K ohm
R417	06S64995F77	10K ohm
R418	06S64995F77	10K ohm
R419	06T70072F21	47 ohm 1/4W
R420	06T70072F19	39 ohm 1/4W
R421	06T70072F21	47 ohm 1/4W
R422	06T70072F21	47 ohm 1/4W
R423	06T70072F21	47 ohm 1/4W
R424	06T70072F21	47 ohm 1/4W
R425	06T70072F19	39 ohm 1/4W
R426	06T70072F47	560 ohm 1/4W
R427	06T70072F45	470 ohm 1/4W
R428	06T70072F47	560 ohm 1/4W
R429	06T70072F45	470 ohm 1/4W
R430	06T70072F31	120 ohm 1/4W
R431	06T70072F31	120 ohm 1/4W
R432	06T70072F31	120 ohm 1/4W
R433	06S64995F83	18K ohm
R434	06T70072F19	39 ohm 1/4W

MPX & Dolby P. C. Board

IC's

IC003	51T94316F02	AN7465S
IC005	51T93333F01	NJM2904M
IC201	51T25767W02	CXA1332M
IC503	51T40242T02	MC14011BFL1

Transistors

Q009	48T94606F62	CP., DTA144TU
Q013	48T94606F03	CP., DTC124EU
Q201	48T62967F03	CP., DTC124K
Q202	48T62967F03	CP., DTC124K
Q203	48T62967F03	CP., DTC124K
Q204	48T62967F03	CP., DTC124K
Q205	48T73888F10	CP., FMG4
Q206	48T73888F10	CP., FMG4

Symbol No.	Part No.	Description
Diode		
D004	48T16617W01	CP., 1SS332
Coils / Buzzer		
L001	24T42241U04	23mH
L002	24T42241U04	23mH
BZ501	50T25148W01	Buzzer, CB13PA-X
Capacitors		
E002	23S61523F29	ELY., 1μF / 50V
E007	23T25149W10	ELY., 22μF / 16V
E008	23S61523F25	ELY., 0.1μF / 50V
E009	23S61523F25	ELY., 0.1μF / 50V
E010	23S61523F26	ELY., 0.22μF / 50V
E011	23S61523F29	ELY., 1μF / 50V
E012	23T25149W15	ELY., 4.7μF / 35V
E013	23S61523F25	ELY., 0.1μF / 50V
E014	23S61523F29	ELY., 1μF / 50V
C016	08S65128F69	CP., 0.01μF
C018	08S65128F67	CP., 6800pF
C019	08T44481F03	PP., 390pF
C020	08S65128F71	CP., 0.015μF
C021	08S65128F71	CP., 0.015μF
C022	08S65128F69	CP., 0.01μF
C023	08S65128F51	CP., 470pF
C024	08S65128F69	CP., 0.01μF
C025	08S65128F63	CP., 3300pF
C026	08T15399W03	CP., 0.047μF
C027	08T15399W03	CP., 0.047μF
C030	08S65128F78	CP., 0.022μF
E050	23S61523F12	ELY., 10μF / 16V
C090	08S65128F61	CP., 2200pF
C091	08S65128F61	CP., 2200pF
C092	08S65128F61	CP., 2200pF
C093	08S65128F61	CP., 2200pF
C094	08S65128F63	CP., 3300pF
C095	08S65128F63	CP., 3300pF
C201	08S65128F66	CP., 5600pF
E201	23T25149W05	ELY., 1μF / 50V
C202	08S65128F66	CP., 5600pF
E202	23T25149W05	ELY., 1μF / 50V

Symbol No.	Part No.	Description
C203	08T00015L17	PP., 2200pF
E203	23T25149W05	ELY., 1μF / 50V
C204	08T00015L17	PP., 2200pF
E204	23T25149W05	ELY., 1μF / 50V
C205	08T00015L17	PP., 2200pF
E205	23S61524F14	ELY., 22μF / 16V
C206	08T00015L17	PP., 2200pF
E206	23S61524F14	ELY., 22μF / 16V
C207	08T90316F38	TF, 0.56μF
E207	23T25149W09	ELY., 10μF / 16V
C208	08T90316F38	TF, 0.56μF
E208	23T25149W13	ELY., 100μF / 10V
E224	23T25149W03	ELY., 0.33μF / 50V
E225	23T25149W03	ELY., 0.33μF / 50V
C241	08T90316F19	TF, 0.015μF
E504	23S61523F12	ELY., 10μF / 16V
C512	08S65128F62	CP., 2700pF
Resistors (All resistors are chip 1/10W ± 5% unless otherwise noted.)		
R021	06S64996F18	470K ohm
R022	06S64995F05	10 ohm
R023	06S64995F79	12K ohm
R024	06S64995F65	3.3K ohm
R026	06S64995F81	15K ohm
R027	06S64995F81	15K ohm
R028	06S64995F65	3.3K ohm
R029	06S64995F69	4.7K ohm
R030	06S64996F26	1M ohm
R031	06S64995F57	1.5K ohm
R032	06S64995F91	39K ohm
R033	06S64995F77	10K ohm
R034	06S64995F77	10K ohm
R035	06S64995F81	15K ohm
R036	06S64996F02	100K ohm
R037	06S64996F14	330K ohm
R038	06S64995F41	330 ohm
R039	06S64996F02	100K ohm
R040	06S64996F02	100K ohm
R041	06S64995F95	56K ohm
R042	06S64995F93	47K ohm
R044	06S64996F08	180K ohm
R046	06S64996F02	100K ohm
R049	06S64995F75	8.2K ohm
R080	06S64996F26	1M ohm
R081	06S64996F26	1M ohm
R090	06S64995F65	3.3K ohm
R091	06S64995F65	3.3K ohm

Symbol No.	Part No.	Description
R201	06S64995F65	3.3K ohm
R202	06S64995F65	3.3K ohm
R203	06S64995F75	8.2K ohm
R204	06S64995F67	3.9K ohm
R205	06S64995F67	3.9K ohm
R206	06S64995F65	3.3K ohm
R207	06S64995F65	3.3K ohm
R208	06S64995F93	47K ohm
R209	06S64995F86	24K ohm
R210	06S64995F29	100 ohm
R211	06S64995F29	100 ohm
R212	06S64995F86	24K ohm
R213	06S64995F47	560 ohm
R214	06S64995F47	560 ohm
R215	06S64995F87	27K ohm
R216	06S64995F79	12K ohm
R217	06S64995F79	12K ohm
R218	06S64995F53	1K ohm
R243	06S64995F75	8.2K ohm
R531	06S64995F93	47K ohm
R532	06S64996F26	1M ohm
R533	06S64995F90	36K ohm
R534	06S64995F37	220 ohm
R535	06S64995F37	220 ohm
VR002	18T35121W11	Variable, 4.7K ohm
VR003	18T16359W09	Variable, 2.2K ohm
VR004	18T25531W14	Variable, 10K ohm
VR201	18T16359W13	Variable, 10K ohm
VR202	18T16359W13	Variable, 10K ohm

Soft Mute P. C. Board

Transistors

Q3001	48S40627U04	2SD636
Q3002	48S40591U04	2SB641

Coil

L3001	24T25798W13	Inductor, 1mH

Capacitors

C3001	08S65480F61	CER.,	0.01μF
C3002	08T50579F30	TF,	2200pF
C3003	08S65480F61	CER.,	0.01μF
C3004	08S65480F61	CER.,	0.01μF

Symbol No.	Part No.	Description

GR Control P. C. Board

IC / Transistor

IC1501	51T25621W01	IC, AN6275K
Q1501	48T84366F05	2SB1243

Resistors (All resistors are chip 1/10W ± 5% unless otherwise noted.)

R1501	06T70072F53	1K ohm 1/4W
R1502	06T70072F53	1K ohm 1/4W
R1503	06S64995F94	51K ohm
R1504	06S64995F77	10K ohm
R1505	06S53330F55	1.2K ohm 1/8W
R1506	06S53330F84	20K ohm 1/8W

GR Audio P. C. Board

IC / Diode

IC1201	51T15146W01	TA7705P
D1201	48T44813F01	Diode, MA165TA

Capacitors

C1201	23T25264W10	ELY.,	10μF / 16V
C1202	08S53332F29	CP.,	330pF
C1203	08S53332F29	CP.,	330pF
C1204	08S53332F29	CP.,	330pF
C1205	08S53332F29	CP.,	330pF
C1206	23S61524F07	ELY.,	47μF / 6.3V
C1207	23S61524F07	ELY.,	47μF / 6.3V
C1208	08T90316F18	TF,	0.012μF
C1209	08T90316F18	TF,	0.012μF
C1210	23S61523F17	ELY.,	4.7μF / 25V
C1211	23S61523F17	ELY.,	4.7μF / 25V
C1216	23S82482F02	ELY.,	100μF / 16V

Symbol No.	Part No.	Description
Resistors (All resistors are chip 1/10W ± 5% unless otherwise noted.)		
R1201	06S53330F29	100 ohm 1/8W
R1202	06S53330F32	130 ohm 1/8W
R1203	06S53330F32	130 ohm 1/8W
R1204	06S64996F14	330K ohm
R1205	06S64996F14	330K ohm
R1208	06S64995F78	11K ohm
R1209	06S64995F78	11K ohm
R1210	06S64995F81	15K ohm
R1211	06S64995F81	15K ohm
R1212	06S64995F65	3.3K ohm
R1213	06S64995F65	3.3K ohm
Miscellaneous		
BA801	06T25650W02	Battery, Lithium CR2032-1VC1
or	06T91060F03	Battery, Lithium CR2032-V03
ET801	01T25803W01	QRB Socket
LCD401	65T35027W01	LCD Display
HD1101	88T15971W01	Head
M1501	01V23900W60	Assy., Motor
PT1501	51T15144W01	Sensor, Photo
SD1501	01T10369W02	Assy., Eject Solenoid
SD1502	01T15249W01	Assy., Play Solenoid
SD1503	01T10371W01	Assy., R/F Solenoid
S1501	40T15222W01	Switch, Detector (PACK IN)
S1502	40T15382W01	Switch, Detector (PACK DOWN)
S1503	40T15382W01	Switch, Detector (METAL)

Symbol No.	Part No.	Description

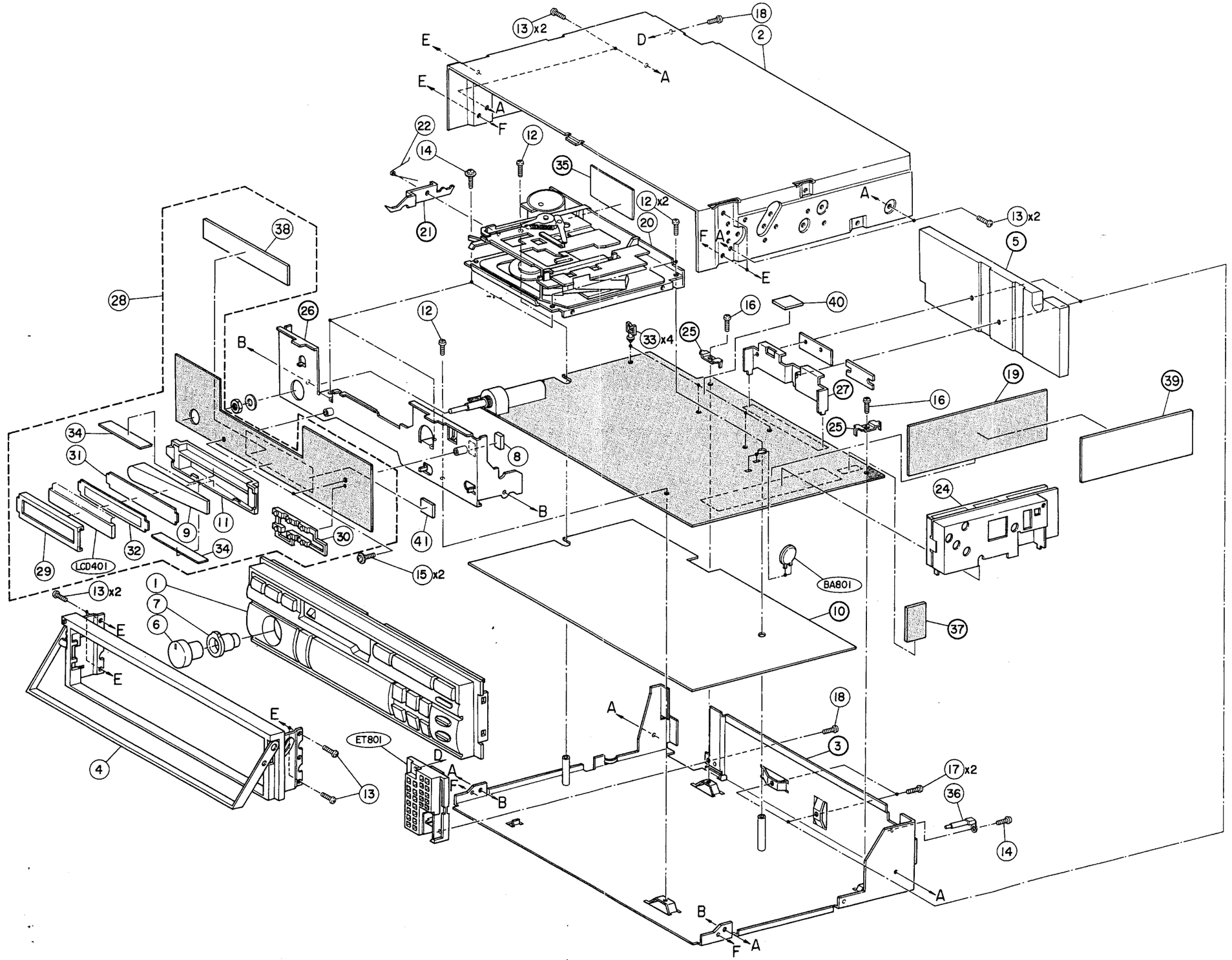
Cabinet Assembly Parts List

NOTE : The parts without parts list are not supplied.

Symbol No.	Index	Part No.	Description
1	4-B	13C21611W04	Assy., Nosepiece
2	1-E	15C21584W03	Cover, Top
4	4-B	07C21606W01	Assy., Bracket Handle
6	4-B	36A21653W01	Knob, Control (Front)
7	4-B	36A21654W01	Knob, Control (Back)
8	3-D	75S30010W06	Cushion, Rubber
9	3-B	61A21582W01	Lens, LCD
11	3-B	15B30048W01	Case, LCD
12		03S44205G07	Screw, Pan (M2.6×5)
13		03S44205G34	Screw, Pan (M6×5)
14		03S71677F06	Screw, Flange (M2.6×6)
15	4-C	03C42723U08	Screw, Cup (M2.6×5.5)
16		03S44205G42	Screw, Pan (M2.6×4)
17	4-F	03D40014G63	Screw, W/Washer (M2.6×16)
18		03S52360F78	Screw, Pan (M2.6×8)
20	2-E	81D20575W05	Cassette Deck, GR75L020
22	1-C	41A20424W01	Spring, Door
24	3-F	77C30794W01	FM/MW/LW Tuner, MB4R901B (FE001)
28	2-B	01V31200W20	Assy., Front P.C.Board
29	3-B	07A30046W01	Bracket, Shield
30	3-C	15B21651W01	Case, LED
31	3-B	26A30047W02	Reflector, Sheet
32	3-B	26A30047W01	Reflector, Sheet
33	2-E	42T93247F05	Clamp, Wire
34	3-B	75T35021W01	Rubber, Electric
36	5-F	01T16427W03	Assy., Lug Wire
38	2-B	14S20875W27	Insulator, Cover
40	2-E	14S94461F44	Insulator, Fiber
41	3-C	14S58462F06	Insulator, Cover

Symbol No.	Index	Part No.	Description

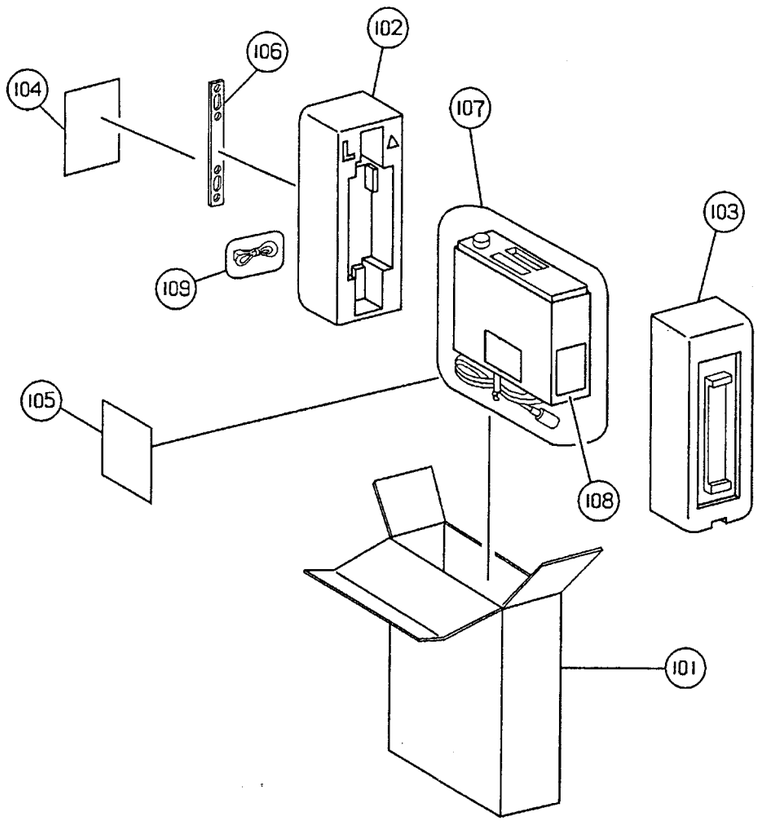
Exploded View (Cabinet)



Packing Assembly Parts List

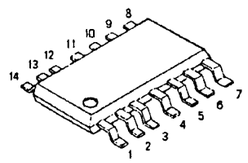
Symbol No.	Part No.	Description
101	56S22119W55	Carton, Packing (Individual)
102	56D21594W01	Tray, Packing (L)
103	56D21594W02	Tray, Packing (R)
104	01V24800W20	Assy., Kit Installation
104-1	02B47353F01	Nut, Hex. (M5)
104-2	03S40012G66	Screw, Tapping (M5×20)
104-3	03B44963F03	Bolt, Hex. W/Washer (M5×10)
104-4	03A40155F05	Bolt, Hex. (M5×14)
104-5	03A40155F01	Bolt, Hex. (M5×8)
104-6	45A41684U01	Arm, Adapter
104-7	03S44205G34	Screw, Pan (M2.6×5)
104-8	07A30081W01	Bracket, QRB (A)
104-9	07A30082W01	Bracket, QRB (B)
105	68P21910W56	Owner's Manual
106	07B64552F01	Bracket, Strap Receiver
107	56C40990T36	Sack, Polyethylene
108	01V31200W18	Assy., Case Mother
108-1	15D21598W01	Case, Mother
108-2	03A28015W01	Screw, Special (M2.6×6.7)
108-3	01T25804W05	Assy., QRB Connector (Plug)
109	01T96095F06	Assy., Connector (4P)

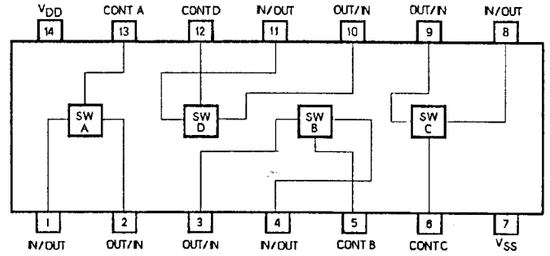
Packing Method View



Semi - Conductor Lead Identifications

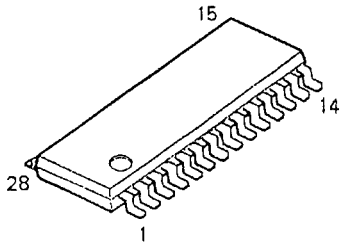
BU4066BF : IC001

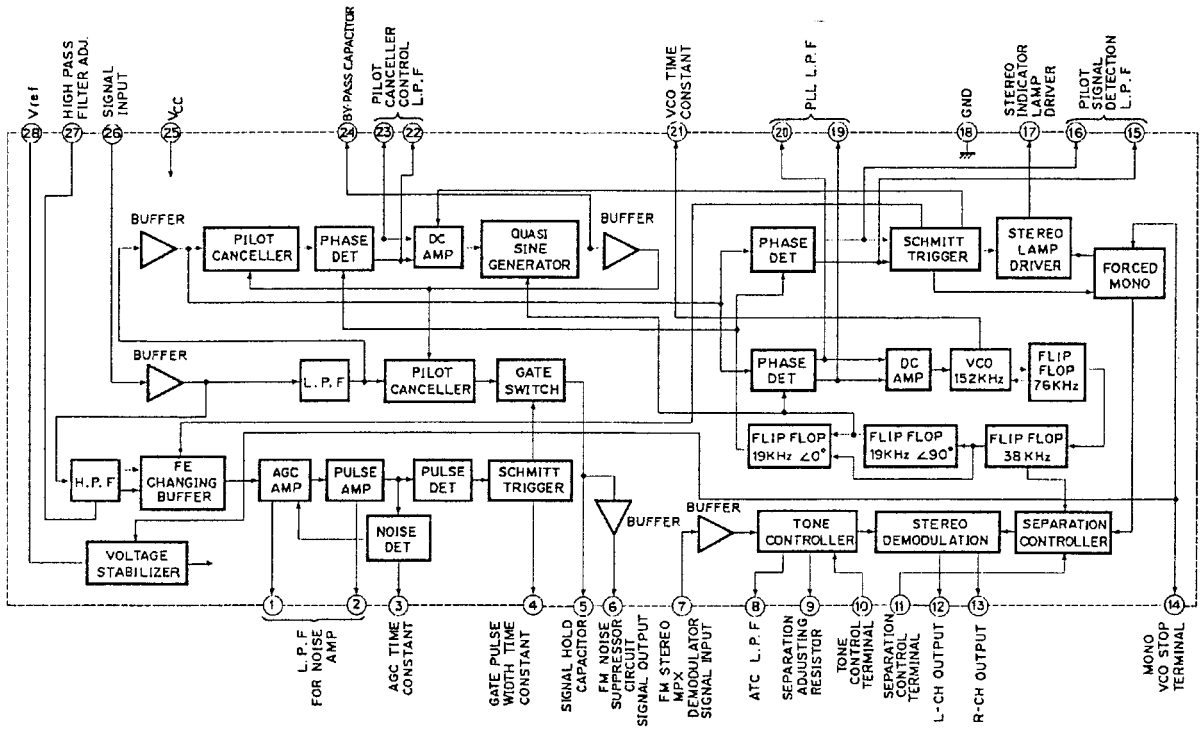




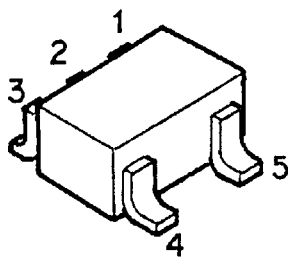
LC7218M : IC002

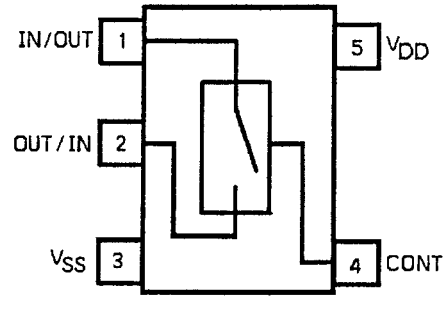
AN7465S : IC003



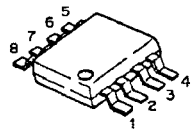


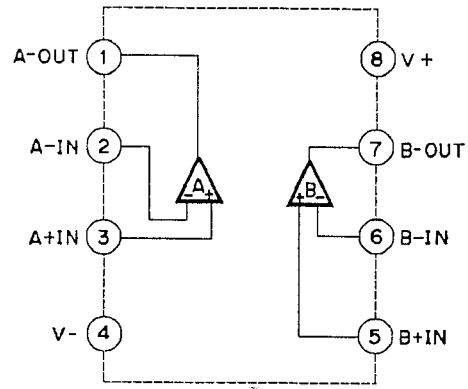
TC4S66F : IC004



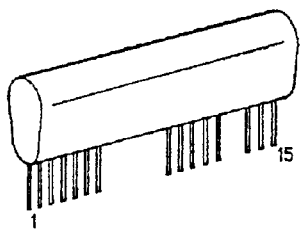


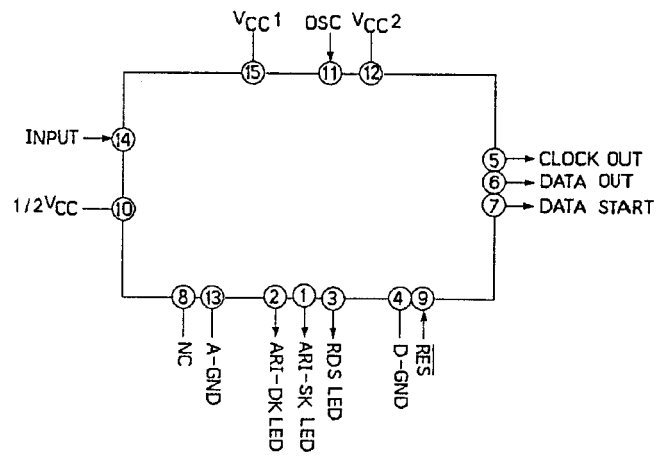
NJM2904M : IC005, 104
NJM2903M : IC103
NJM4560M : IC204, 301
NJM4558M : IC803



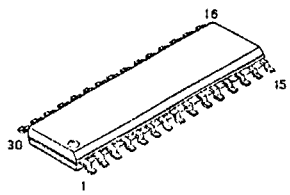


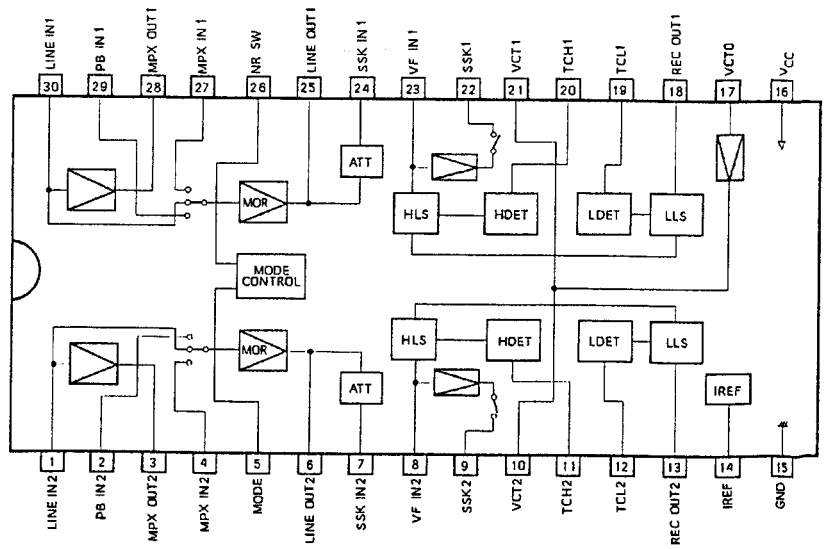
35087W01 : IC101



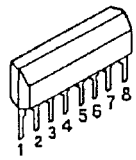


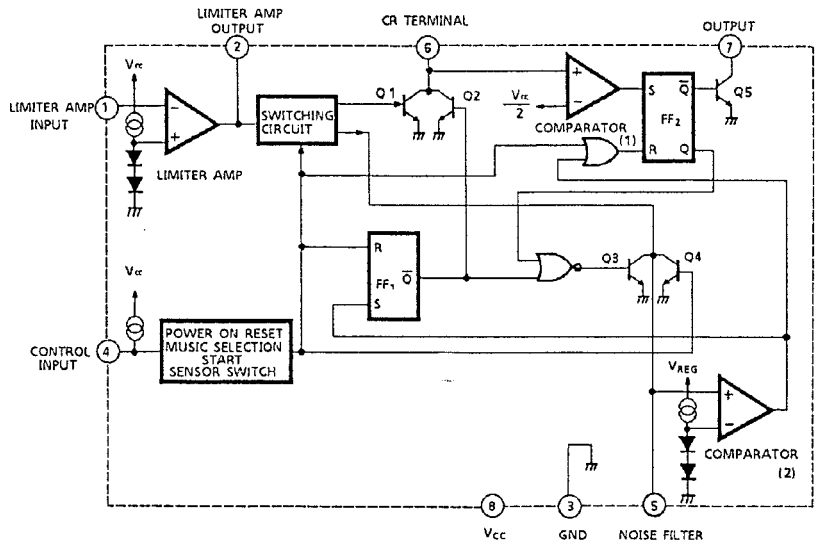
CXA1332M : IC201



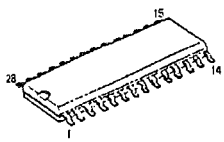


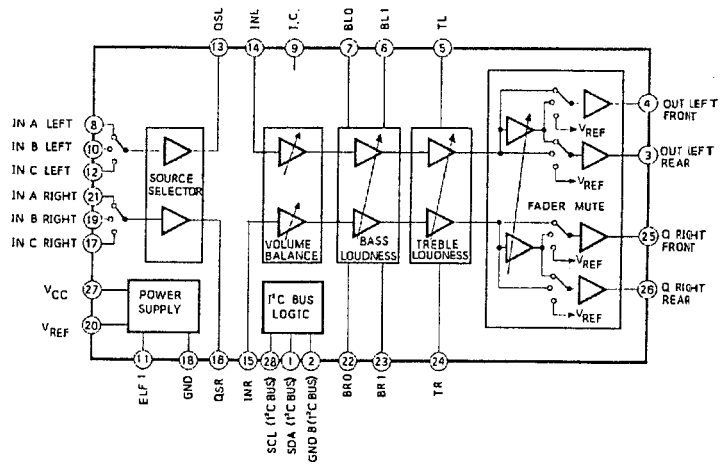
M51143AL : IC202



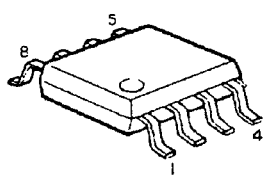


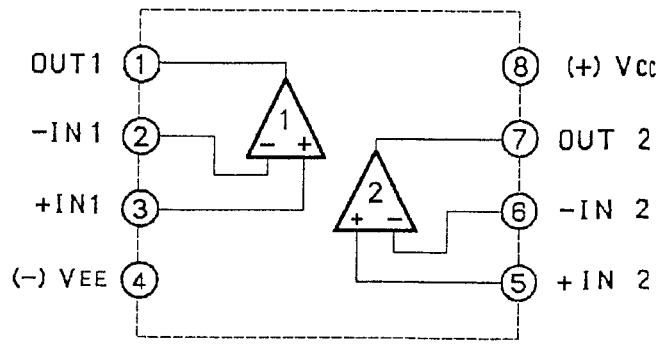
TEA6300T : IC203



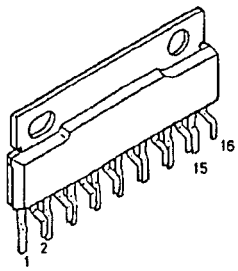


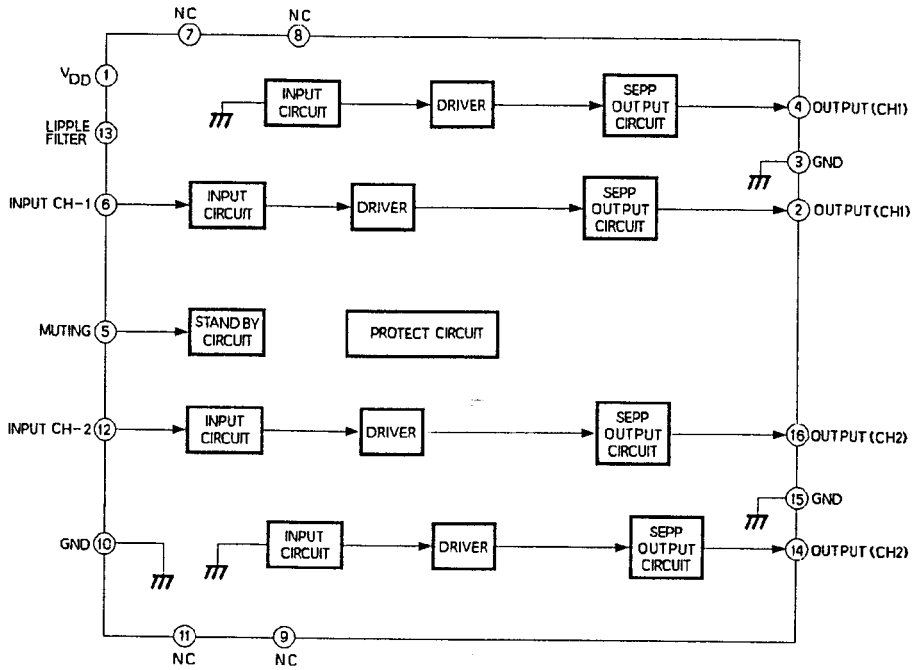
BA15532F : IC302



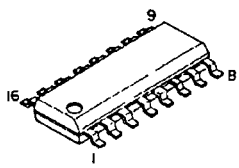


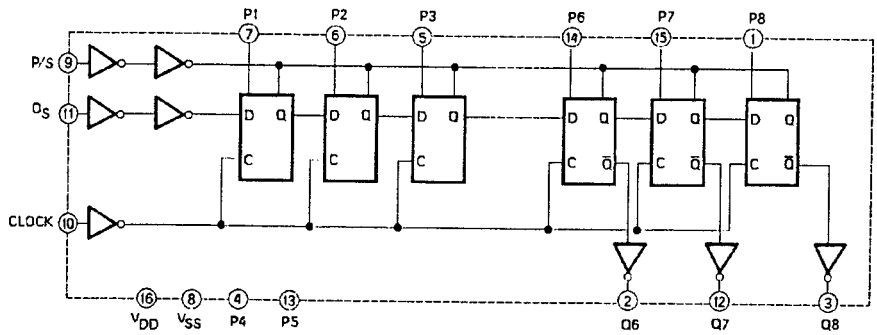
AN7183K : IC303



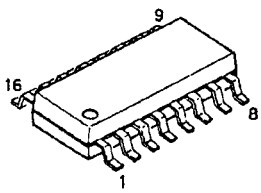


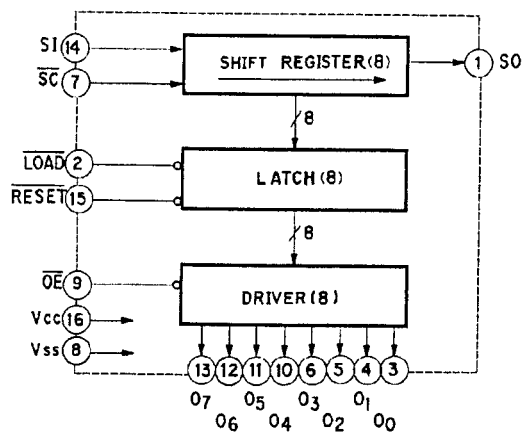
MC14014BFEL : IC401



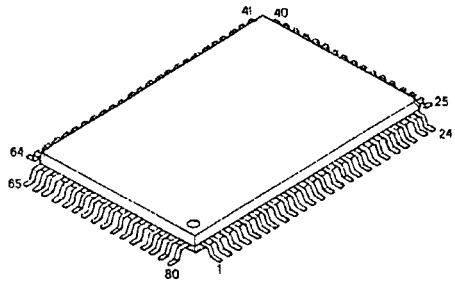


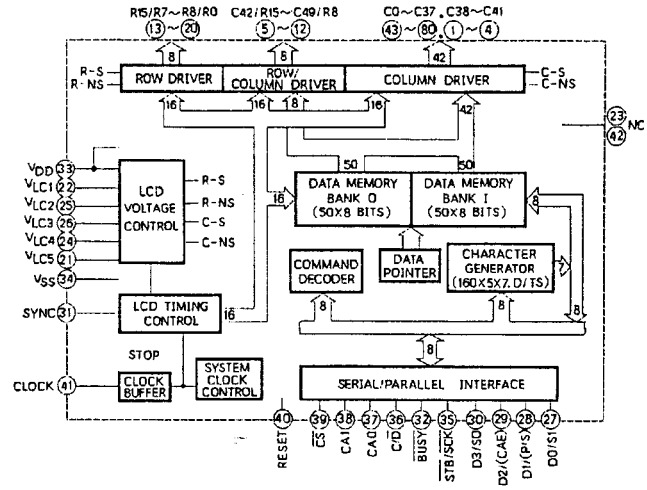
MB88306PF : IC402



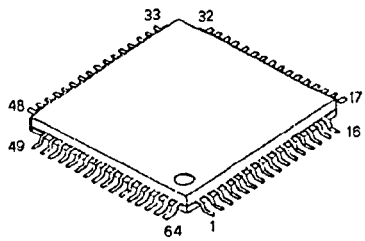


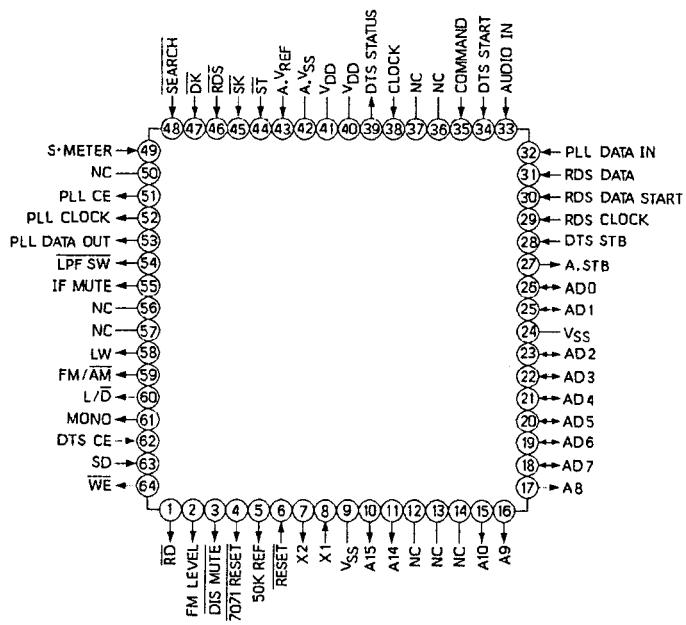
µPD7228AG : IC403



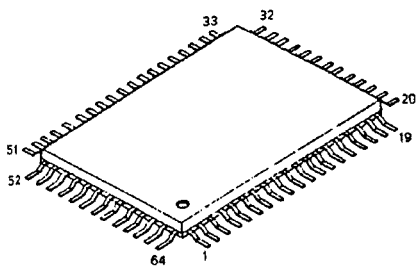


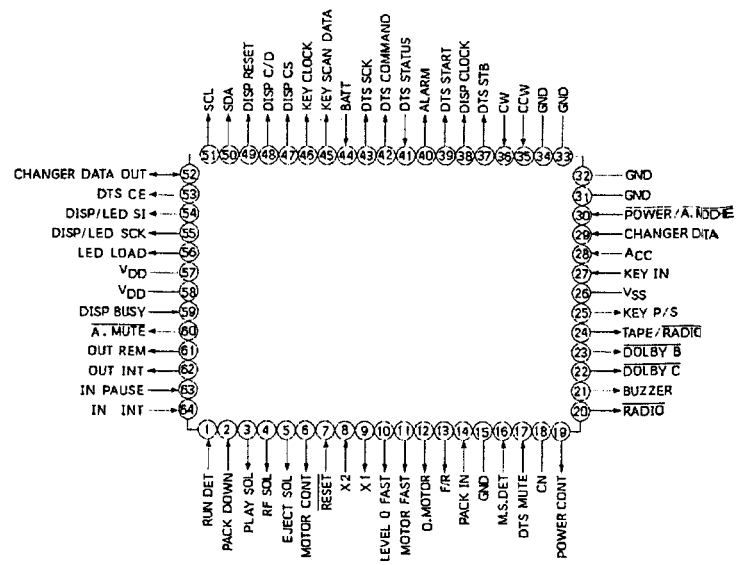
25699W23 : IC501



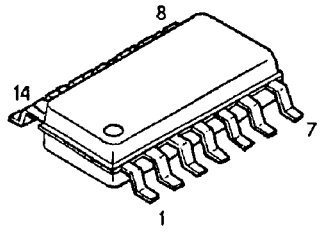


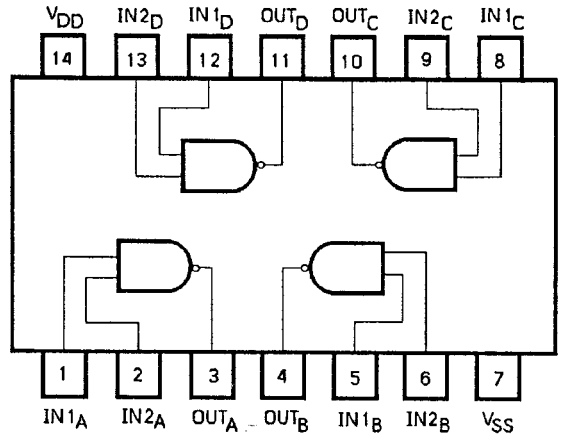
15590W32 : IC502



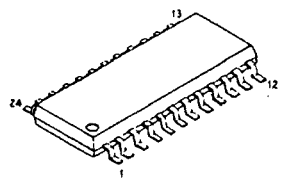


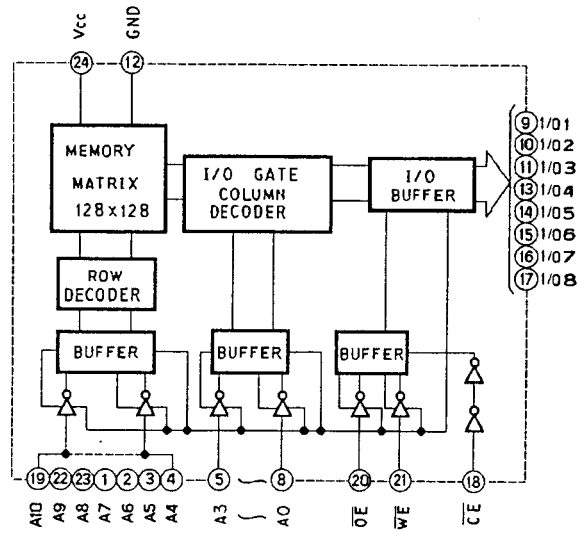
MC14011BFL1 : IC503



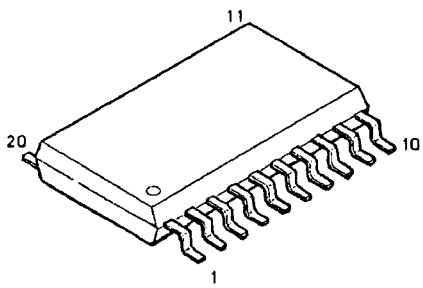


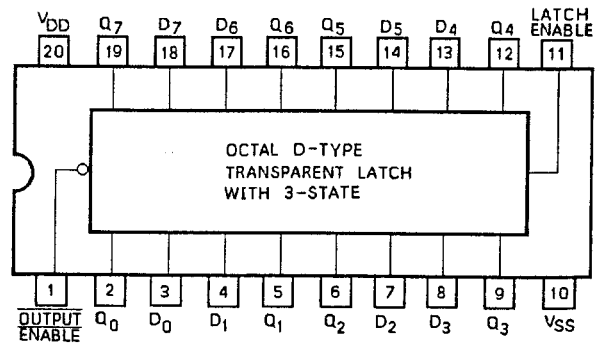
LC3516AML
CXK5816M : IC504



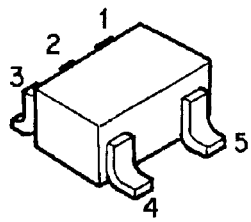


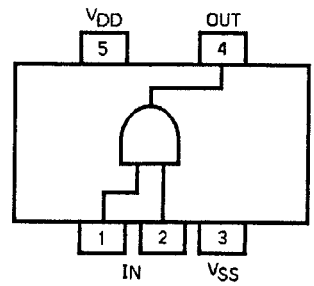
µPD74HC373 : IC505



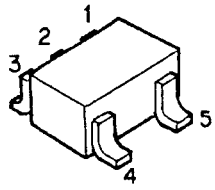

VDD Q7 D7 D6 Q6 Q5 D5 D4 Q4 LATCH ENABLE
20 19 18 17 16 15 14 13 12 11
OCTAL D-TYPE
TRANSPARENT LATCH
WITH 3-STATE
1 2 3 4 5 6 7 8 9 10
OUTPUT ENABLE Q0 D0 D1 Q1 Q2 D2 D3 Q3 VSS

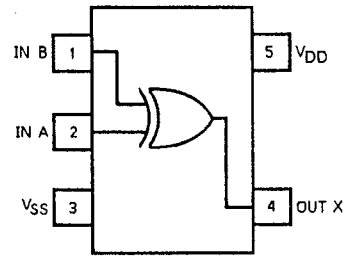
TC4S81F : IC506



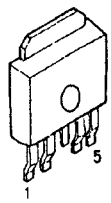


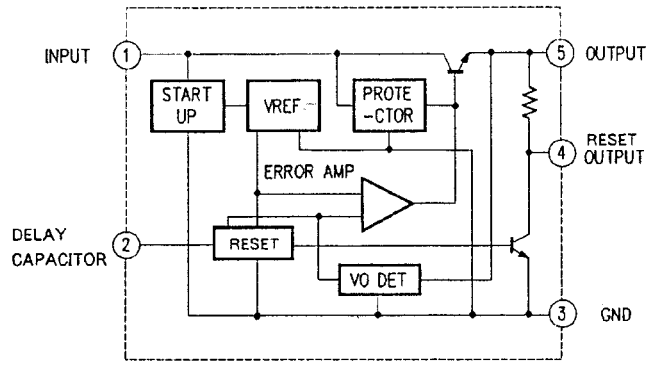
TC4S30F : IC507



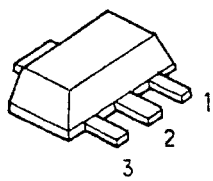


L78LR05DFA : IC801

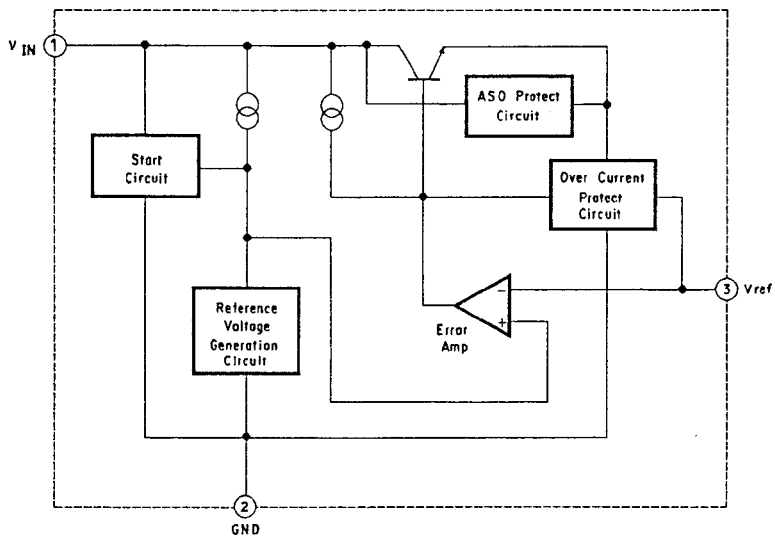




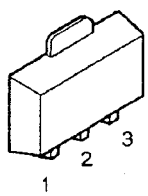
M5236ML : IC802

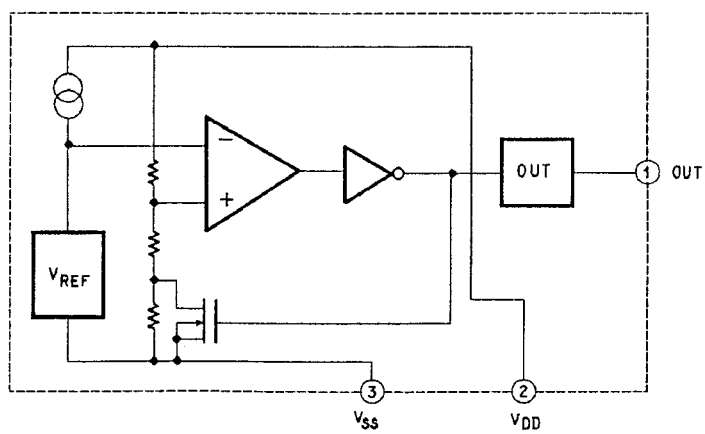


1 : V_{IN}
2 : GND
3 : V_{REF}

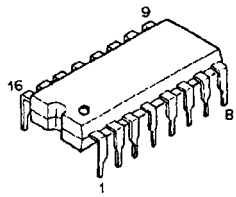


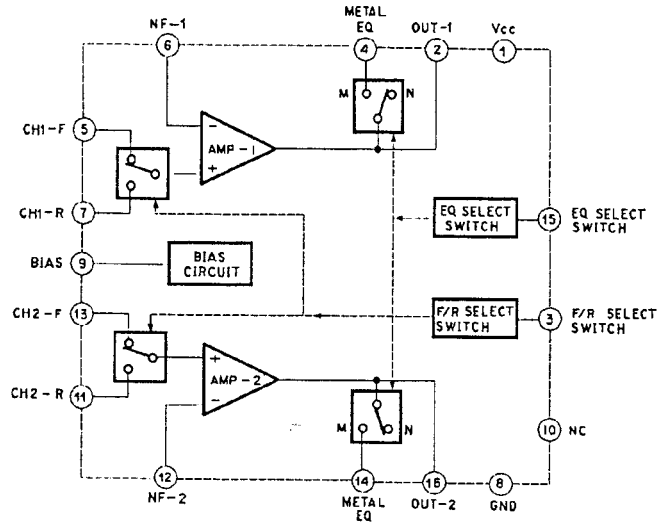
S-8052ALR : IC804



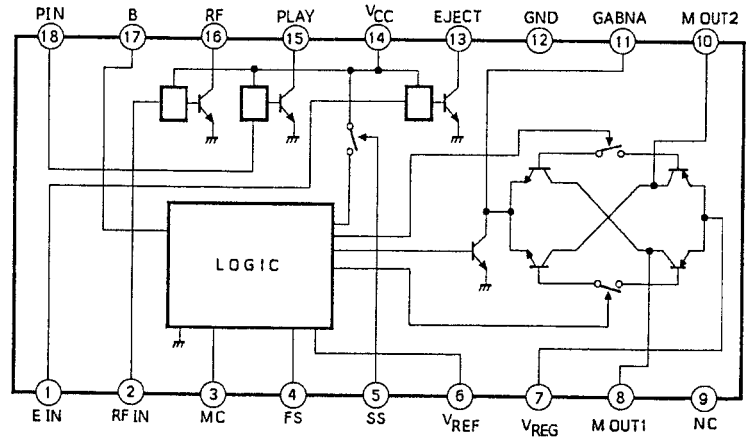


TA7705P : IC1201 (GR75L020)





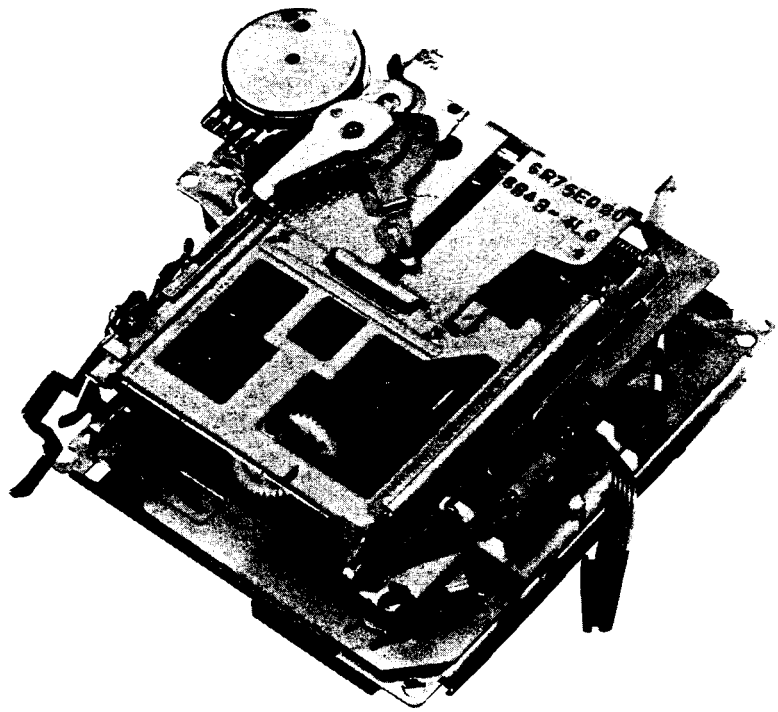
AN6275K : IC1501 (GR75L020)



ALPINE SERVICE MANUAL

Exploded View & Parts List For Cassette Deck Mechanism

ADDENDUM & REVISED



GR SERIES

Contents

List of Usable Lock Washers 3

List of Usable Oil 3

List of Usable Jigs 3

Disassembly, Assembly and Replacement of Functional Parts ..... 5 to 16

Exploded View (Cassette Deck) ..... 17 to 18

Cassette Deck Assembly Parts List ..... 19 to 20

List of Usable Lock Washers

	SIZE	PARTS NO.	QUANTITY
1	(M1.2 x 3.5 x 0.25)	04A41345P01	8
2	(M1.7 x 3.5 x 0.25)	04A41345P02	1
3	(M2.1 x 5 x 0.25)	04A41345P06	1
4	(M1.2 x 2.5 x 0.25)	04A41345P11	8
5	(M1.7 x 3.5 x 0.35)	04A41345P12	2
6	(M1.2 x 3.5 x 0.35)	04A41345P15	1
7	(M1 x 2.5 x 0.25)	04A41345P17	1
8	(M2.6 x 5 x 0.25)	04A41345P29	1
9	(M3.1 x 8 x 0.05)	04A41345P30	1
10	(M1.7 x 3 x 0.25)	04A41345P31	1
11	(M3.1 x 5 x 0.35)	04A41345P32	2

List of Usable Oil

1) Molykote E paste
2) Grease EM-30L
3) Grease FLOIL 425A

List of Usable Jigs

1) GR bottom gear jig (Part No. 44A20788W01)
2) Head height adjustment gauge
   (M-300 or AT-500)

Disassembly, Assembly and Replacement of Functional Parts

1. Disassembly and Assembly of Bottom Cover

(1) Turn the mechanism around as shown in Figure 1.
(2) Remove M1 lock washer ① as shown in Figure 1.
(3) Remove three screws ② as shown in Figure 1.
(4) Lift the bottom cover slowly from the position Ⓐ-1, pull the hooks out of the holes in the chassis, and remove the bottom cover as shown in Figure 1.
(5) When remounting the bottom cover, first turn the front of the mechanism up as shown in Figure 2.
(6) Slide the slider in the direction Ⓐ-2 as shown in Figure 2.
(7) Push down the cassette holder in the direction Ⓐ-3 as shown in Figure 2.
(8) Pull the door pin in the direction Ⓐ-4 so that the mechanism is locked in as shown in Figure 2.
(9) Turn the mechanism around as shown in Figure 3.
(10) Pull the automatic metal lever in the direction Ⓐ-5 and the RF solenoid chip in the direction Ⓐ-6 as shown in Figure 3.
(11) Insert the hooks of the bottom cover into the chassis in the direction Ⓐ-7, and then join the part Ⓐ-8 of the bottom cover to the chassis slowly, making sure that the 3 points indicated with the straight lines in the Figure 3 are fitted properly.
If there are troubles in mounting the bottom cover, do not apply force but remove the bottom cover once again and check the positions of the individual parts. (Refer to Figure 3.)
(12) Since the hooks marked Ⓐ-8 will be lifted slightly as shown in Figure 4, insert the jig through the hole Ⓐ-9, and fix it turning the jig slightly.
Instead of operation (12), turn the gear nose slowly with a precision screwdriver etc., taking care not to damage it.
After 2 to 3 turns, it will click into place.
(Refer to Figure 4 and 5.)
(13) Fix the screws and the lock washer that have been removed.

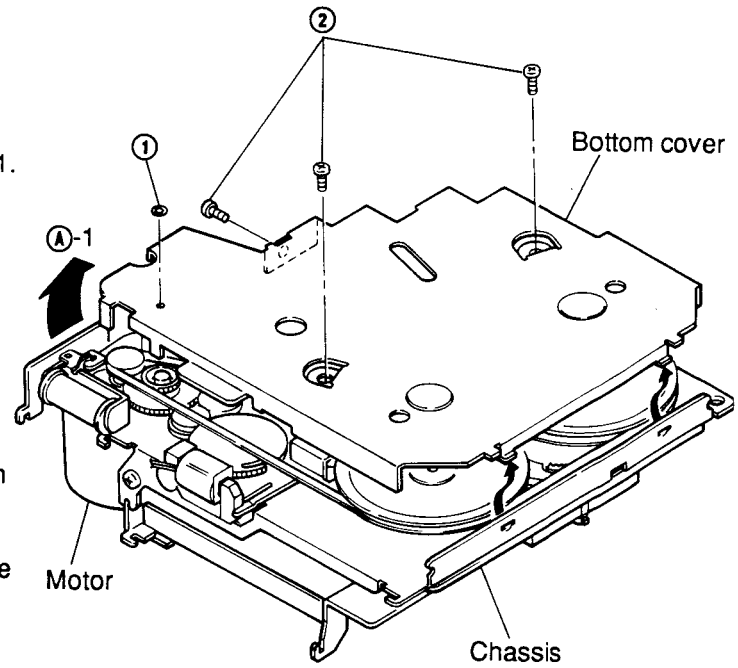


Figure 1

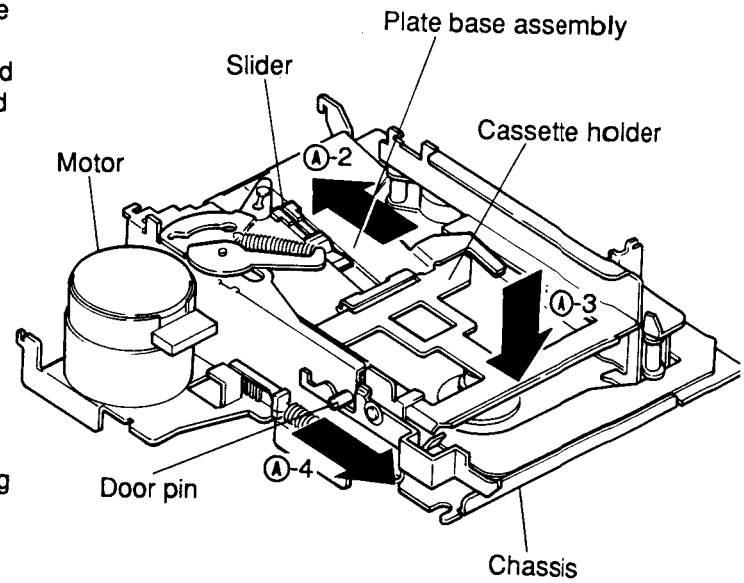


Figure 2

(14) Insert the jig into the hole Ⓐ-9 as shown in Figure and rotate the eject solenoid counterclockwise about 20 times, pulling it in the direction Ⓐ-10 with the finger.
Then the eject operation is completed.
Instead of operation (14), the eject operation can be performed by mounting the mechanism to the product. (Refer to Figures 4 and 5.)

Note: Do not reuse the used lock washers for mounting.
When turning the mechanism, be careful not to drop the gear and the flywheel.
Fasten the three screws with a fastening torque of 6 kg/cm.

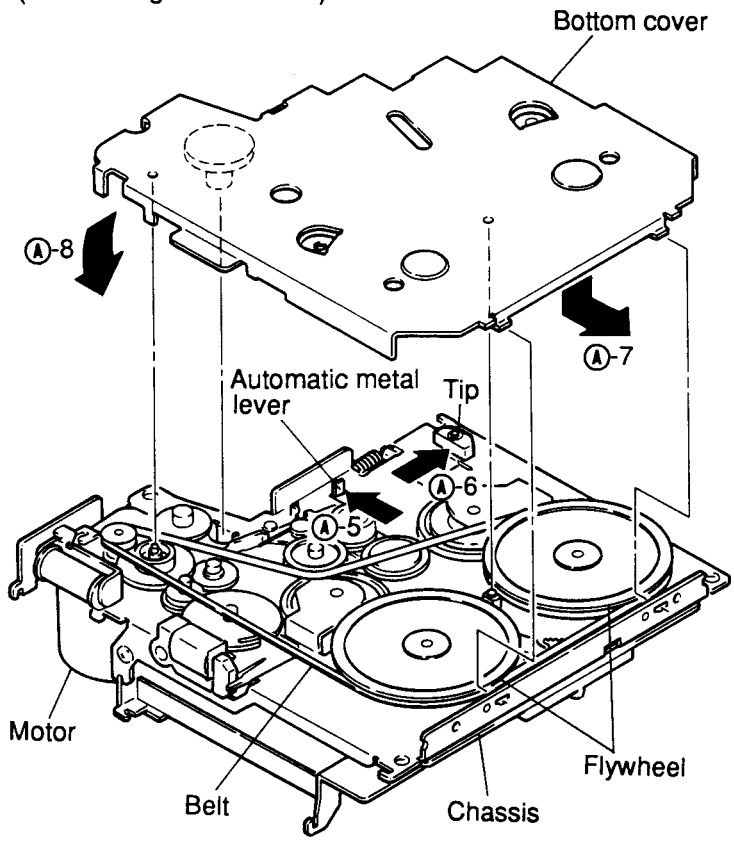


Figure 3

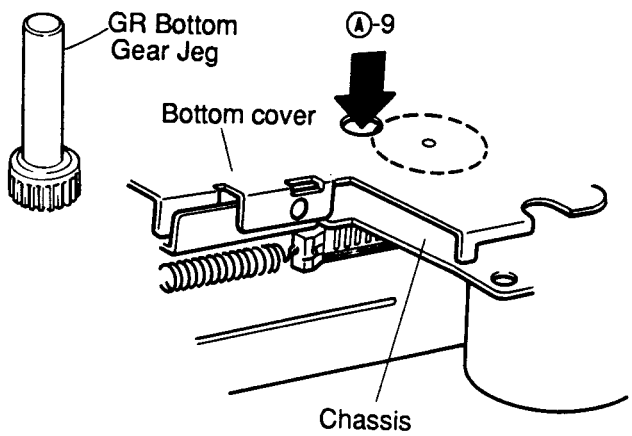


Figure 4

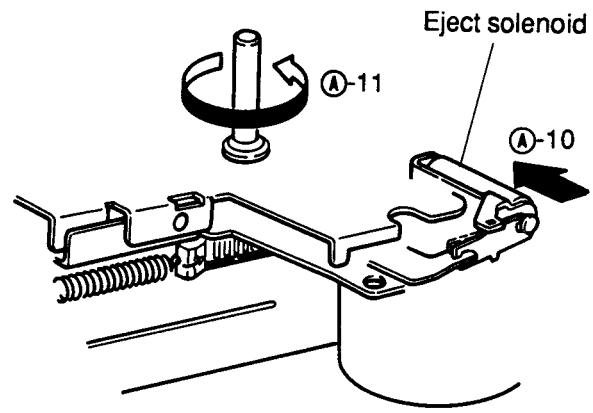


Figure 5

2. Replacement of the bottom cover mounting parts

a. Replacement of the eject gear
(1) Remove M1.2 lock washer ③ as shown in Figure 6.
(2) Pull the eject pinion out of the eject gear and remove the eject gear as shown in Figure 6.
(3) Apply the molykote E paste to the section ⑧-1, and mount the eject gear following the removal steps in the reverse order. After replacement is finished, make sure that the gear rotates smoothly. (Refer to Figure 6.)

Note: Do not reuse the used lock washers for remounting.
Take care to avoid damage by piercing and tearing.

b. Replacement of the RF solenoid
(1) Remove two solders ④ and remove the RF solenoid from the bottom cover by pulling it up as shown in Figure 6.
(2) Replace the solenoid with a new one, and remount it following the removal steps in the reverse order as shown in Figure 6.

Note: When removing solder ④, set the temperature of the soldering iron to 350° +/– 10° and the soldering time to 1 – 3 seconds. Take care that the solder is not loose, that there is no shortcircuit and that the coating is not damaged.

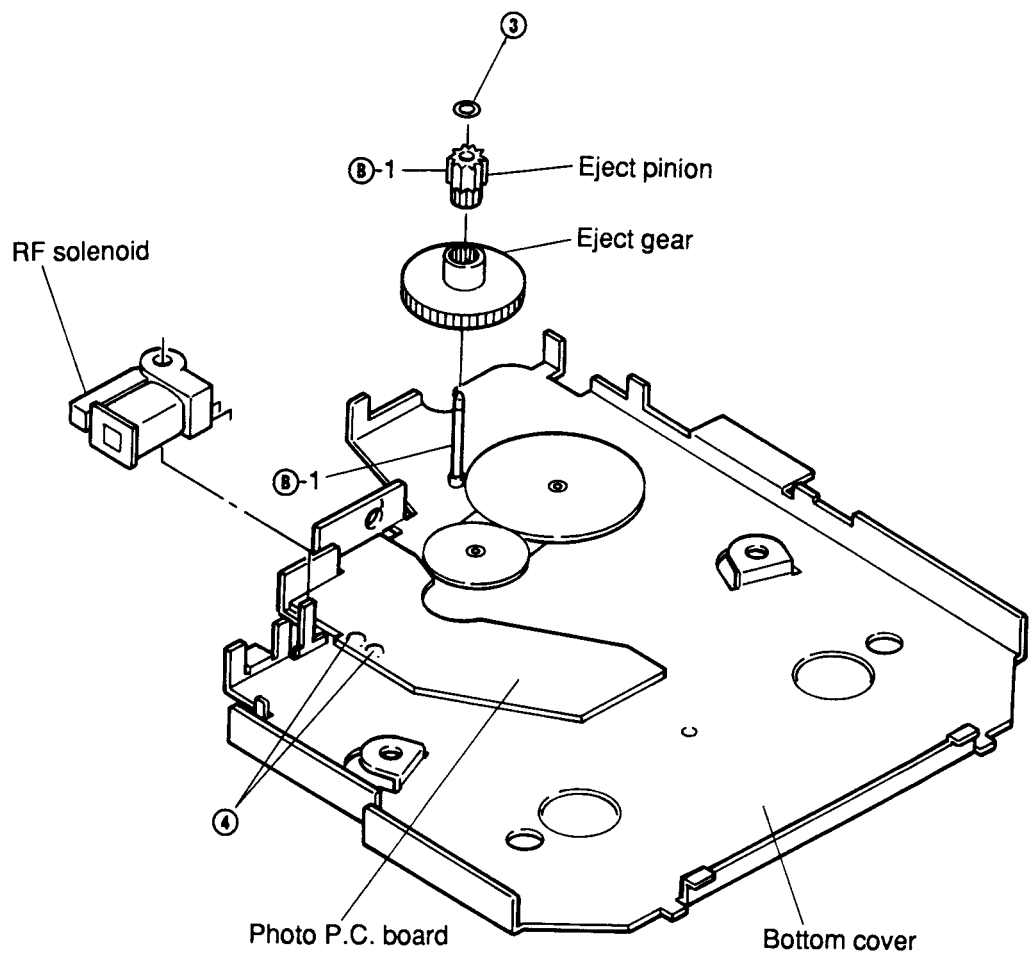


Figure 6

c. Replacement of the photo sensor
   (1) Remove four solders ⑤ as shown in Figure 7.
   (2) Remove the photo guide together with the photo sensor from the photo PC board as shown in Figure 7.
   (3) Insert the new photo sensor into the photo guide, and bend the legs of the photo sensor in the direction marked ⑤-2 as shown in Figure 7.
   (4) Insert the photo guide into the PC board and solder the legs so that the photo sensor is set as indicated by [ ] in Figure 7.

Note: When using the soldering iron, set the temperature of the soldering iron to 350° +/– 10° and the soldering time to 1 – 3 seconds. Take care that the solder is not loose, that there is no shortcircuit and that the coating is not damaged. Also take care that the photo guide is properly fixed and straight.

d. Replacement of the detector switch
   (Automatic metal packing ???)
   (1) Remove 2 solders ⑥ with which the the switch is fixed as shown in Figure 7.
   (2) Prepare the terminals of the switch of the new solder as shown in Figure 8.
   (3) After that, insert the switch into the photo PC board, and solder the terminals.

Note: When using the soldering iron, refer to Item 2-C to make sure that the temperature of the soldering iron and the soldering time are proper. Also take care that the switch guide is properly fixed and straight.

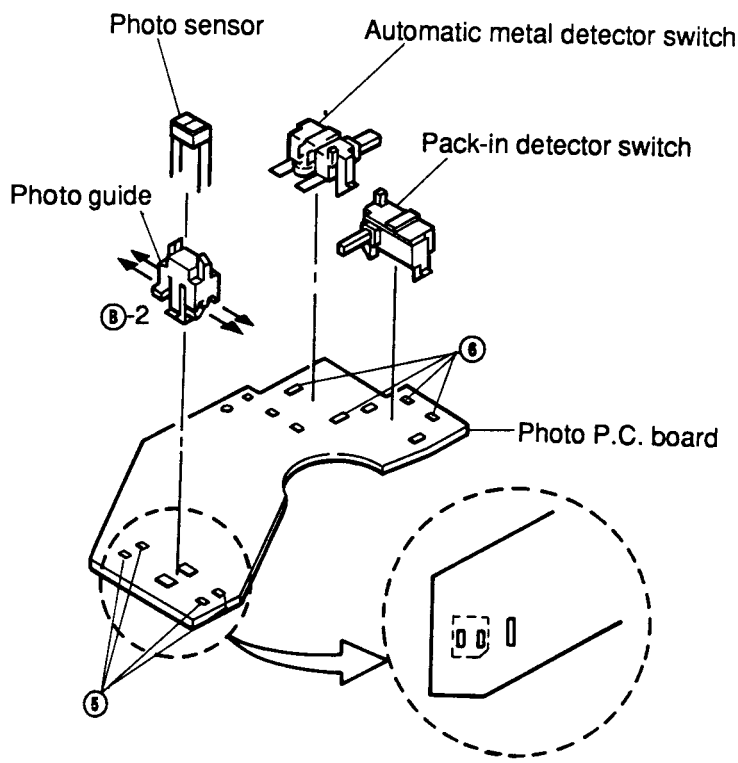


Figure 7

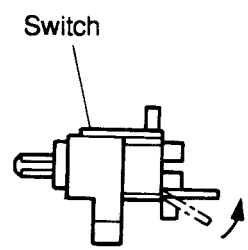


Figure 8

3. Replacement of the mounting parts on the rear of the main chassis

a. Replacement of the belt

(1) After removing the bottom cover, remove the belt.
(2) Clean the new belt with absolute alcohol, and fix it as shown in Figure 9.

Note: When fixing the belt, make sure that it is not twisted or dirty. When removing the belt, do not turn up the front of the chassis.

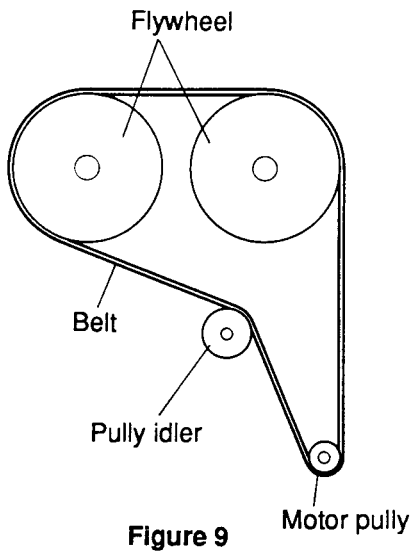


Figure 9

b. Replacement of the motor

(1) After removing the belt, remove spring ⑦ as shown in Figure 10.
(2) Remove solder ⑧-1, and remove the parallel wire (5P) from the control PC board as shown in Figure 11.
(3) Remove two screws ⑨ and ⑩, and remove the motor, taking care not to damage the motor idler gear. (Refer to Figure 10.)
(4) Mount the new motor following the removal steps in the reverse order.

Note: Refer to Item 2-C to make sure that the temperature of the soldering iron and the soldering time are proper. Since the parallel wire is very easily damaged, handle it with care.
Fasten the two screws with a fastening torque of 3 kg.cm.

*When inserting the clutch spring, be careful of the inserting direction as shown in the Figure.

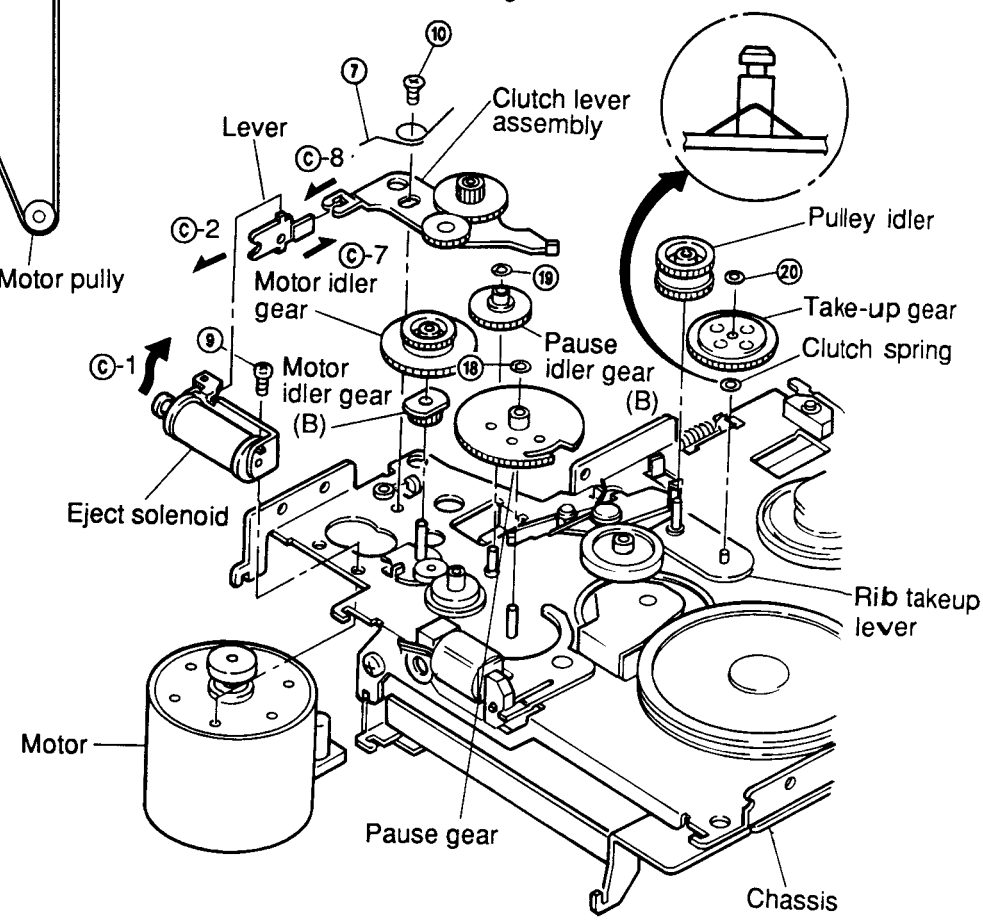


Figure 10

c. Replacement of the flywheels
   (1) After removing the belt, pull out the two flywheels. Take care not to loose the polyslider washer ⑪ located between the flywheel and the chassis. (Refer to Figure 12.)
   (2) Fix the polyslider washer to the new flywheel and mount the flywheel to the chassis.

d. Replacement of the play solenoid
   (1) Remove the two solders ⑧-2 as shown in Figure 11.
   (2) Remove one screw ⑫ and remove the solenoid as shown in Figure 11.
   (3) Mount the new solenoid following the removal steps in the reverse order.

Note: Refer to Item 2-C to make sure that the temperature of the soldering iron and the soldering time are proper. Fasten the screws with a fastening torque of 2.3 kg.cm.

e. Replacement of the eject solenoid
   (1) Remove two solders ⑧-3. Take care not to loose the tube that protects the wire. (Refer to Figure 11.)
   (2) Remove screw ⑨ and remove the play solenoid as shown in Figure 10.
   (3) Align position Ⓒ-1 of the new solenoid with position Ⓒ-2 of the lever and fasten the screws as shown in Figure 10.
   (4) Lead the wire through the tube and solder it.

Note: Refer to Item 2-C to make sure that the temperature of the soldering iron and the soldering time are proper. Fasten the screws with a fastening torque of 3 kg.cm. As the solder wires are not insulated, do not let them cross each other.

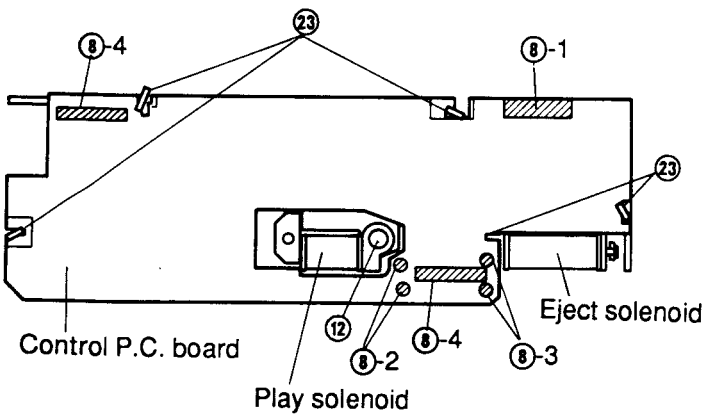


Figure 11

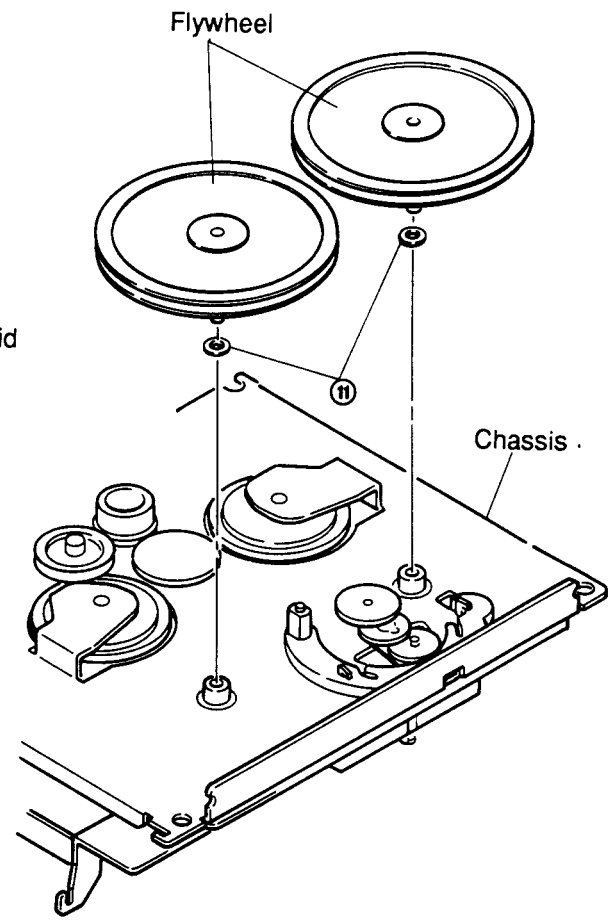


Figure 12

f. Replacement of gears

(f-1) Replacement of the reverse idler gear

(1) Remove M1.2 lock washer ⑬, pull it up from the stud of the chassis and remove the gear as shown in Figure 13.

(2) Remount following the removal steps in the reverse order.

(f-2) Replacement of the sun gear

(1) Remove M1.2 lock washer ⑭, pull it up from the stud of the chassis and remove the gear as shown in Figure 13.

(2) Mount it, following the removal steps in the reverse order.

(f-3) Replacement of the fixing gear

(1) Adjust the two mounting claws for the fix gear on the chassis ⑮ and remove the section Ⓒ-3 of the gear by pulling it up in the direction of the arrow shown in Figure 13.

(2) Insert the section Ⓒ-4 of the new gear into the chassis, and mount it following the removal steps in the reverse order as shown in Figure 13.

(f-4) Replacement of the reverse lever assembly and planet gear

(1) Remove both the fixing gear and the sun gear and remove the reverse lever assembly as shown in Figure 13.

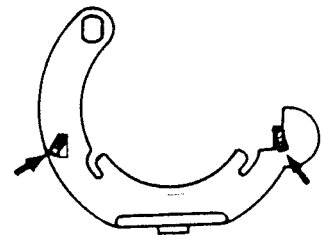
(2) Remove M1.7 lock washer ⑯ and remove the planet gear as shown in Figure 14.

(3) Mount the new planet gear and reverse lever following the removal steps in the reverse order.

Notes on f-1 through f-4:

After mounting all parts, check if the reverse lever assembly moves in the directions marked Ⓒ-5 when the reverse gear is turned clockwise and counterclockwise.

* After mounting the fixing gear, bend them into the form of as shown in the Figure.



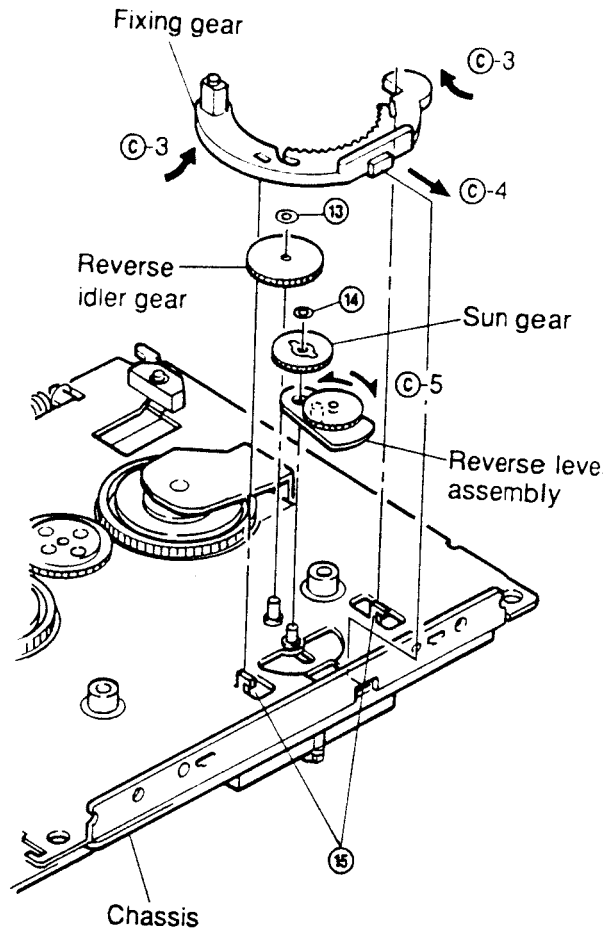


Figure 13

(f-5) Replacement of the clutch lever assembly and eject idler gear
(1) After removing the motor, remove the motor idler gear and the motor idler gear (B) and remove the clutch lever assembly as shown in Figure 10.
(2) Remove M1.2 lock washer ⑰ and remove the eject idler gear as shown in Figure 15.
(3) Mount the new gears and clutch lever following the removal steps in the reverse order.

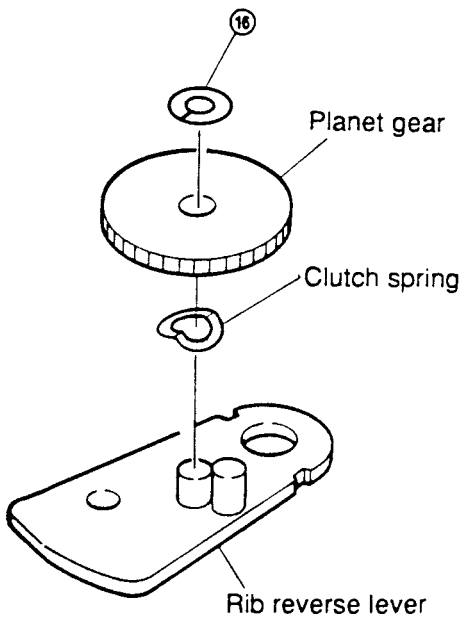
Note: When mounting the gears to the lever, apply grease (FLOIL 425A) to the position Ⓒ-6 as shown in Figure 15. Align the position Ⓒ-7 with the position Ⓒ-8 and mount the clutch lever as shown in Figure 10.

(f-6) Replacement of the pause gear
(1) Remove M1.2 lock washer ⑱ and remove the pause gear pulling it up from the stud of the chassis as shown in Figure 10.
(2) Mount the new gear following the removal steps in the reverse order.

(f-7) Replacement of the pause idler gear (B)
(1) After removing the motor and the motor idler gear, remove M1.2 lock washer ⑲ and remove the gear by pulling it up from the stud of the chassis as shown in Figure 10.
(2) Mount the new gear by following the removal steps in the reverse order.

(f-8) Replacement of the take-up gear
(1) After removing the belt and the pulley idler gear, remove M1.2 lock washer ⑳ by pulling it up from the stud of the rib take-up lever assembly as shown in Figure 10.
(2) Remount the take-up gear following the removal steps in the reverse order.

Notes on f:
Do not reuse the used washers. Take care to avoid damage by piercing and tearing.



[Disassembly Reverse Lever Assembly]

Figure 14

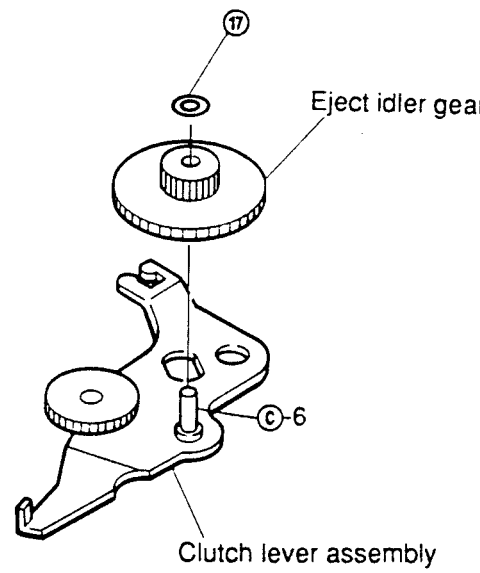


Figure 15

4. Replacement of the parts mounted on the front of the chassis

a. Replacement of the audio PC board
(1) Remove two solders ㉑ and remove the parallel wire (7P) and the head PC board as shown in Figure 16.
(2) Adjust the two claws ㉒ to the rectangular holes on the PC board and remove the PC board as shown in Figure 16.
(3) After replacement, mount the new PC board following the removal steps in the reverse order.

Note: The head PC board and the parallel wires are easily damaged. Handle them with care. Refer to Item 2-C to make sure that the temperature of the soldering iron and the soldering time are proper. Do not bring the soldering iron near the head PC board.

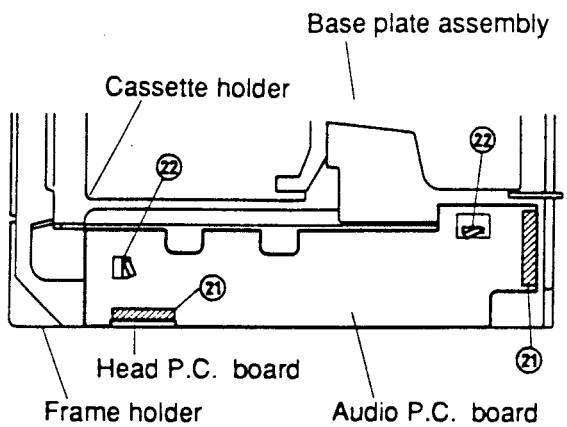


Figure 16

b Replacement of the control PC board
(1) Remove seven solders ⑧ and remove the three parallel wires and the wires of the eject solenoid and of the play solenoid as shown in Figure 11.
(2) Remove the claws ㉓ and remove the PC board as shown in Figure 11.
(3) After replacing the old PC board with a new one, mount it following the removal steps in the reverse order.

Note: As mentioned in Item 4-a, handle the parallel wires carefully, and be sure that the temperature of the soldering iron and the soldering time are proper. As the wires of the eject solenoid are not insulated, do not let them cross each other.

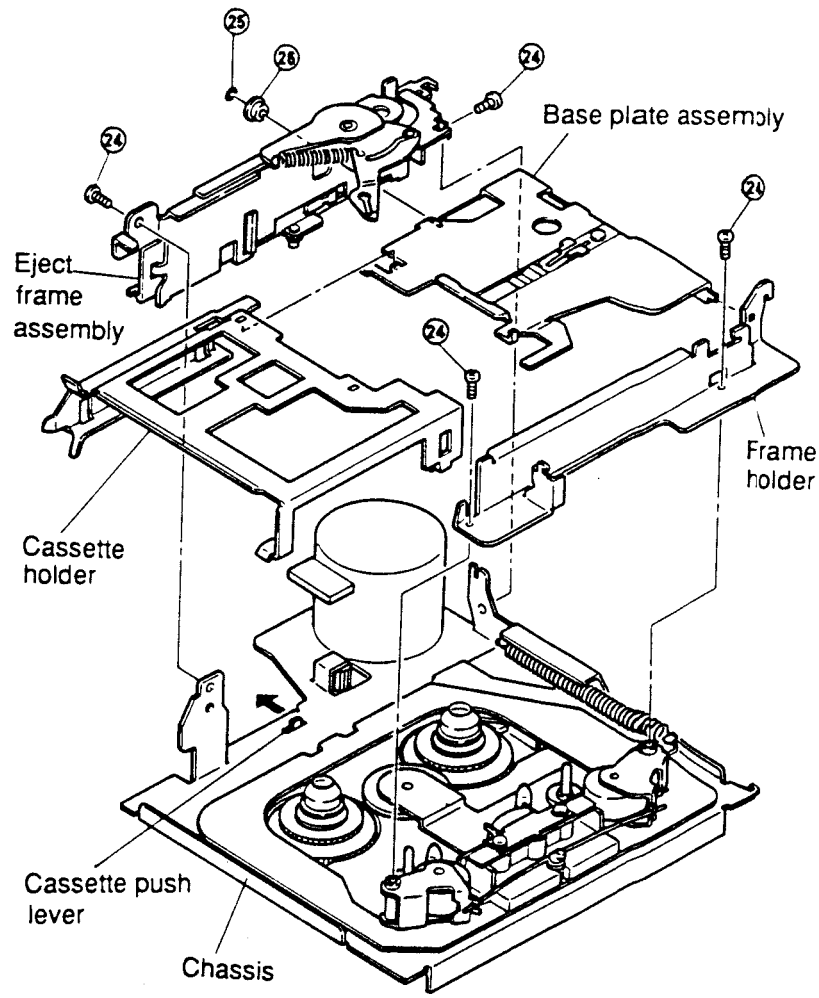


Figure 17

c. Disassembly and assembly of the cassette holder
(1) Remove four screws ㉔ and remove the eject frame assembly and the frame holder as shown in Figure 17.
(2) Remove M1.2 lock washer ㉕ and plate base roller ㉖ and remove the cassette holder and the base plate assembly as shown in Figure 17.
(3) Remount them following the removal steps in the reverse order.

Notes: 1. When mounting the cassette holder and the base plate, insert the slider shaft into the eject arm and fix them turning the slider shaft in the direction indicated by the arrow in the figure. Make sure that the cassette holder and the base plate are in the cassette-in mode during this operation. (Refer to Figure 18).
2. When mounting the eject frame assembly, push the cassette push lever in the direction indicated by the arrow in the Figure 17.
3. When mounting the base plate assembly and the eject frame assembly, or when mounting the eject frame assembly to the chassis, do not apply excessive force to avoid deformations of the eject arm and the frame.
4. Do not reuse the used washers. Take care to avoid damage by piercing and tearing.

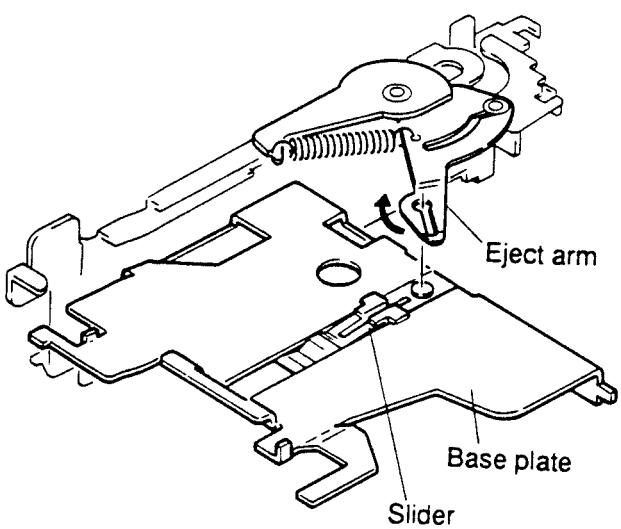


Figure 18

d. Replacement of the reels
(1) Remove M1.7 lock washers ㉘ (Refer to figure 19).
(2) Move the select lever in the direction marked Ⓓ-1 in the Figure and remove the reel by gripping the reel gear as shown in Figure 19.
(3) After replacement, mount the new reels following the removal steps in the reverse order.
(4) After mounting, check the tape speed and the wow and flutter with test tape MTT-III.

Note: Since the reel is easily loosened if the cap is gripped, always handle it gripping the gear. Do not reuse the used washers. Take care to avoid damage by piercing and tearing.

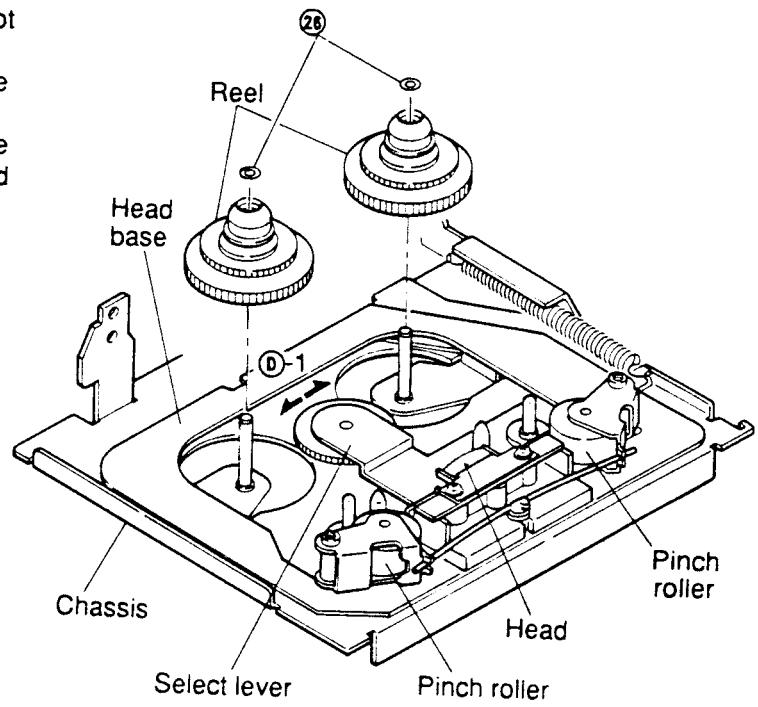


Figure 19

e. Replacement of the pinch rollers

(1) Remove pinch roller spring ㉗ as shown in Figure 20.

(2) Remove M3.1 lock washers ㉘ and remove the pinch roller as shown in Figure 20.

(3) Mount the pinch rollers following the removal steps in the reverse order.
Apply insulation coating to the position Ⓓ-2 of the pinch roller as shown in Figure 20.

Note: Make sure that the pinch rollers are thoroughly fixed and that they are not deformed. Do not reuse used lock washers. Take care to avoid damage by piercing and tearing.

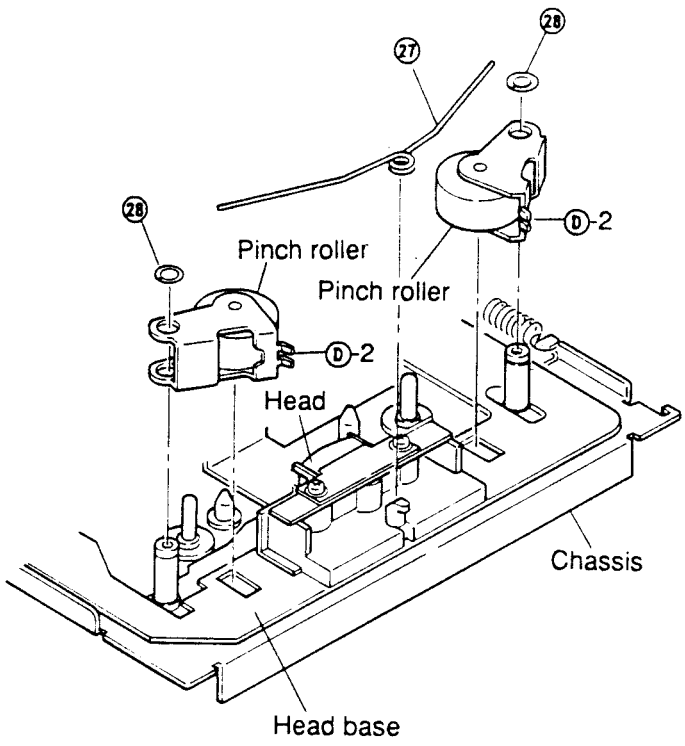


Figure 20

f Replacement of the head

(1) After removing the pinch roller spring, remove two screws ㉙ as shown in Figure 21.

(2) Remove solder ㉚ and remove the head from the head PC board as shown in Figure 22.

(3) After replacement, mount the new head following the removal steps in the reverse order.

Notes: 1. Refer to Item 2-C to make sure that the temperature of the soldering iron and the soldering time are proper. Do not bring the soldering iron near the head PC board. Make sure that the head PC board is not lifted.

2. Fasten the two screws with a fastening torque of 2.3 kg.cm. Note that the tension of the head spring can be decreased if the screws are fastened too strongly.

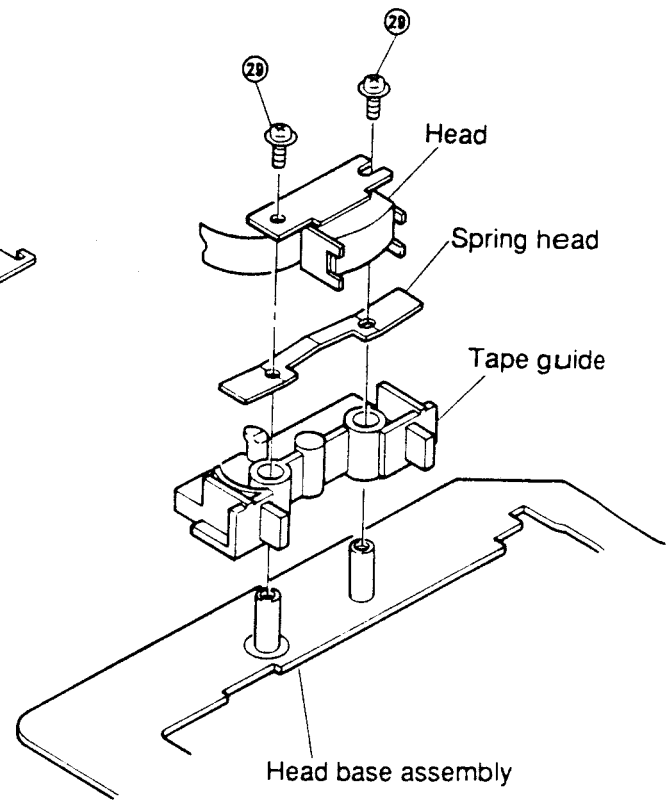


Figure 21

(4) Adjust the height of the head as shown in Figures 23, 24 and 25.

① Place the height adjustment gauge (M-300 or AT-500) on the head base, and adjust the height so that the check bar fits in the tape head guide smoothly.

② When the check bar touches the top (or bottom) of the tape guide, insert a spacer (t 0.1 mm or polislider washer t 0.13 mm). If necessary, remove the spacer.

Note: If you do not have a height gauge like described in ④-①, run the tape at normal speed and adjust the height of the head and the tape head guide so that the tape does not curl.

(5) After having assembled the complete mechanism, adjust the angle of the head with test tape MTT-113C. (Refer to chapter "Adjustment of the head angle".) After the adjustment, apply the screw lock and fix the screws.

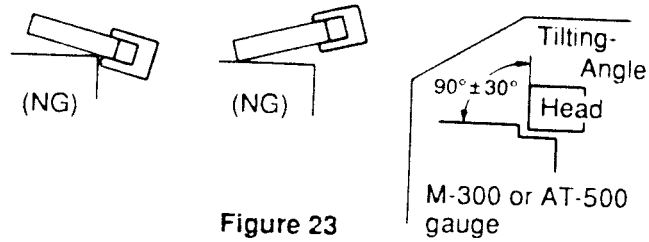


Figure 23

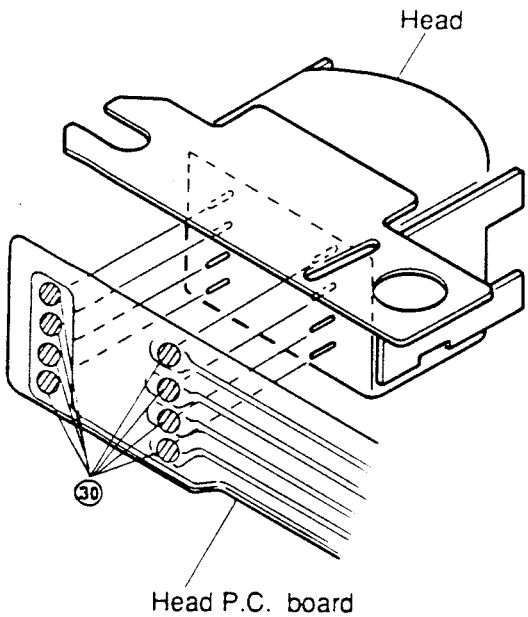


Figure 22

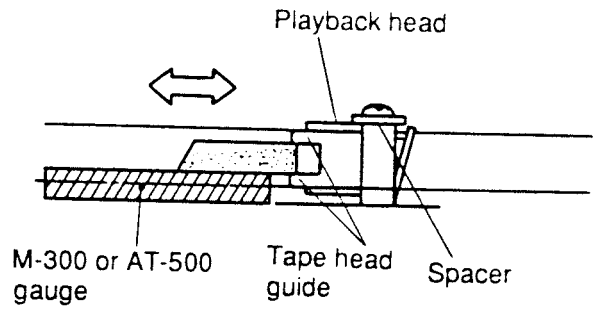
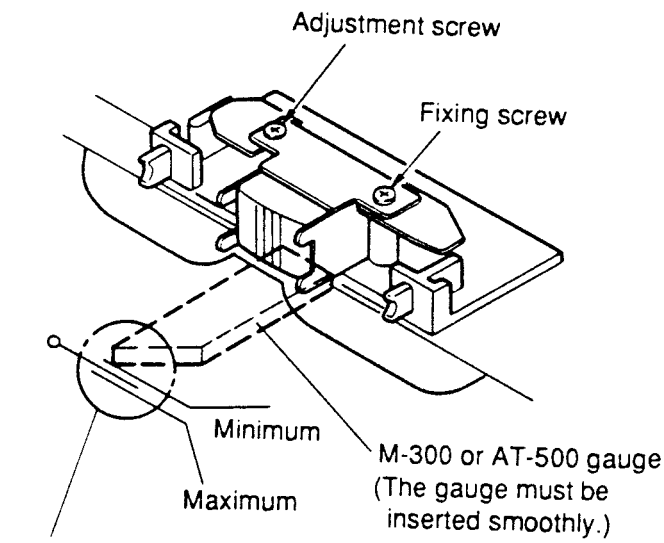


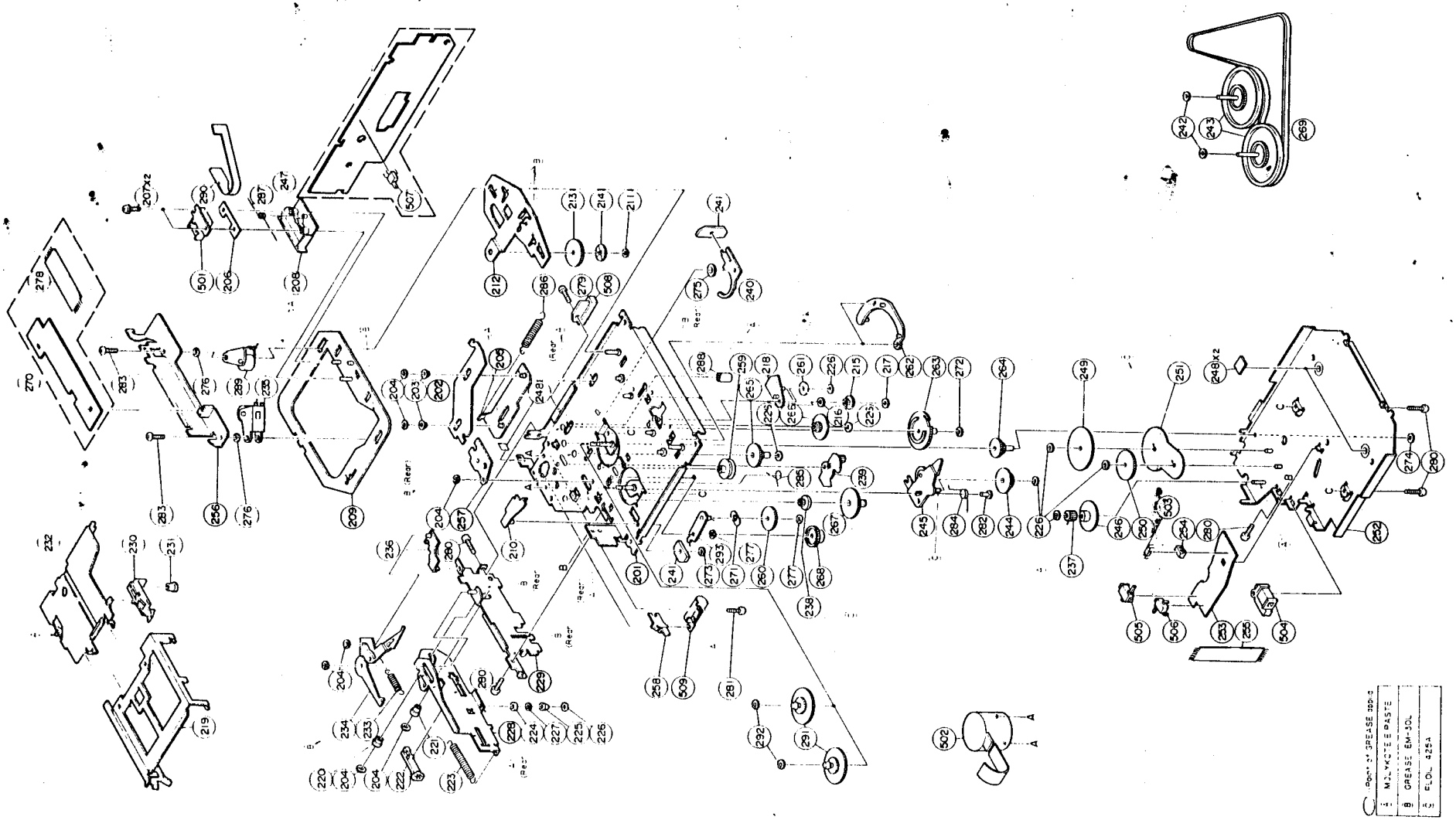
Figure 24



The nosepiece of the gauge must be between the minimum and maximum positions.

Figure 25

Exploded View (Cassette Deck)



Cassette Deck Assembly Parts List

Note The parts without part numbers are not supplied

Symbol No	Index	Part No.	Description
203	3-C	43A11072W01	Roller. Sub Head
204		04A41345P01	Washer. Lock(M1.2)
206	2-B	41A10095W01	Spring. Head
207	2-B	03S40019G03	Screw. F-Locks(M2x4)
208	2-B	43B12545W01	Tape. Guide
210	4-C	01A10206W01	Assy..Riv Lever R/F Sol
211	2-D	04A41345P29	Washer. Lock(M2.6)
213	2-D	44A10295W01	Gear. Sensor
214	2-D	14A10681W01	Reflector
215	3-E	44A10142W01	Gear. Planet
216	3-E	41A10097W02	Spring. Clutch
217	3-E	04A41345P31	Washer. Lock(M1.7)
218	3-E	01A10203W01	Assy.. Riv Lever Reverse
219	4-B	07B10074W01	Holder. Cassette
220	5-B	43A12583W01	Roller. Eject
221	5-C	43A63281F01	Roller. Plate Base
222	5-C	44A82206F01	Rack
223	5-C	41B10386W03	Spring. GR(Rack)
224	4-C	43A10121W01	Roller. Eject A
225	4-D	43A10360W01	Roller. Eject B
226		04A41345P11	Washer. Lock(M1.2)
227	4-D	43A12377W01	Roller. Eject C
230	4-A	45B10376W01	Slider
231	4-B	47A63278F01	Shaft. Slider
232	4-A	01A10212W01	Assy..Riv Plate Base
233	4-C	41B10386W01	Spring. Eject Arm
234	4-B	01A10148W01	Assy.. Riv Eject Arm A
235	3-B	01B10381W02	Assy.. Pinch Roller
236	4-C	01A10202W01	Assy.. Riv Lever Pack In SW
237	4-F	44A12975W01	Pinion. Eject
238	4-E	44A13617W01	Gear. Motor Idler(B)
239	3-E	01A10201W01	Assy.. Riv Lever Pause
240	2-D	45A10092W01	Lever. Play
241		76T10374W01	Chip
242	1-G	04S40075G05	Washer Polyslider (M2.1)
243	1-G	01A10368W01	Assy.. Flywheel
244	3-F	44A10141W01	Gear. Eject Idler
245	3-E	01A10205W01	Assy.. Riv Lever Clutch A
246	3-F	44A10145W01	Gear. Eject
247	2-B	01V11500W18	Assy.. GR Control
248		43A90918F01	Spacer. Polyslider
249	3-F	44A11063W01	Gear. Bottom A
250	3-F	44A11064W01	Gear. Bottom B
251	3-G	04A11122W01	Washer. GR
254	3-G	15B11065W01	Guide. Photo
255	4-G	30T15126W01	Wire. PC Sensor(7P)
258	4-D	45A10101W01	Lever. Eject Sol
259	3-D	49A10131W01	Pulley. Idler
260	4-F	44A10133W01	Gear. Take Up
261	3-E	44A10134W01	Gear. Sun
262	3-E	44B10135W01	Gear. Fix
263	3-E	44B10136W01	Gear. Pause
264	3-F	44A10137W01	Gear. Pause Idler A
265	3-D	44A10379W01	Gear. Pause Idler B
266	3-E	44A10138W01	Gear. Reverse Idler
267	3-E	44A10139W01	Gear. Motor Idler
268	4-E	44A11062W01	Gear. Reel Idler
269	1-G	42A10380W01	Belt. GR
● 270	3-A	01V14700W68	Assy.. GR Audio
■ 270	3-A	01V11500W19	Assy.. GR Audio
▲ 270	3-A	01V11500W19	Assy.. GR Audio
271	4-D	41A10097W02	Spring. Clutch
272	3-F	04A41345P15	Washer. Lock(M1.2)
273	4-D	04A41345P02	Washer. Lock(M1.7)
274	3-H	04A41345P17	Washer. Lock(M1)
275	2-D	04A41345P30	Washer. Lock(M3.1)
276	3-B	04A41345P32	Washer. Lock(M3.1)
277		04A41345P06	Washer. Lock(M2.1)
278	2-A	30T15126W02	Wire. PC Joint 7P
279	2-D	03S44205G78	Screw. Pan(M2x6)
280		03S44205G30	Screw. Pan(M2.6x4)
281	4-D	03S72235F38	Screw. Pan(M2x3.3)
282	3-F	03A12132W02	Screw. Eject Clutch (M2x2.3)
283		03S43997P64	Screw. Pan(M1.7x3)
284	3-F	41A10384W01	Spring. Eject Clutch
285	3-E	41A10385W01	Spring. Cas Push
286	2-C	41B10386W02	Spring. Sub Head
287	2-B	41A10387W01	SP. Pinch Roller
288	3-D	43A12719W01	Roller. Pause
289	3-B	01B10381W01	Assy.. Pinch Roller

Notes : ● ; For GR75E020 model only ■ ; For GR75E010 model only
▲ ; For GR75E01A model only Others ; Common

Symbol No	Index	Part No	Description
	290	2-B	84T10367W01	Panel, Head
●	291	4-E	01T15164W01	Assy., Reel
■	291	4-E	01T15164W01	Assy., Reel
▲	291	4-E	01T15164W02	Assy., Reel
	292	4-F	04A41345P12	Washer, Lock(M1.7)
	293	4-D	01A11078W01	Assy., Riv Lever Take Up
				Miscellaneous
●	501	2-B	86T15971W01	Head
■	501	2-B	86T10373W01	Head
▲	501	2-B	86T10373W01	Head
	502	4-E	01V11500W64	Assy., Motor
	503	3-C	51T15144W01	Sensor, Photo
	504	4-C	01T10371W01	R/P Sol. Assy.
	505	4-F	40T15382W01	SW., Detector (Pack Down)
	506	4-C	40T15382W01	SW., Detector(Metal)
	507	2-C	40T15222W01	SW., Detector (Pack In)
	508	2-D	01T15249W01	Assy., Play Solenoid
	509	4-D	01T10369W01	Assy., Eject Solenoid

Notes : ● : For GR75E020 model only ■ : For GR75E010 model only
▲ : For GR75E01A model only Others : Common